BIOTERRA

BULLETIN OF SCIENTIFIC INFORMATION
NR. 29 January-June 2015
(twice a year publication)

CERMI Publishing House
Recognized by
National Council for Scientific Research in Higher Education (NURC), cod 181
edituracermi@hotmail.com www.cermi.3x.ro 0040 723 136 640

Technical Editors:
GALAN Cătălin
catalin.galan@gmail.com

Professional Translation:
LĂZUREANU Cătălin

Office:
Nicolae Șuțu Street, no. 11 – 15
Central building, second floor, room 9,
sector 1, Bucharest, Romania
http://www.bioterra.ro/bulletin.php

Publication Recognized by NURC category "C" code NURC : 882
Publication located in the international database: ReportLinker.com
ISSN 1454 – 816X

President's Allocution

*We have the special pleasure to let you know that the Review of our University, „**Bulletin of Scientific Information**", having ten years of consecutive issue, it achieved the recognition of the **National Council for Scientific Research in Higher Education (NURC)**, being comprised in the category „**National Reviews – C Category**".*

*So, the Bioterra University review „**Bulletin Of Scientific Information**" works as a real platform for the information and exhibition of the most recent and valuable research in the agricultual field and connected sciences (food industry, agro-tourism, ecology, agricultural economics etc.).*

This way I express my gratitude the contributors to our review, authoritative academic and univeritary names of whose studies are found in the selection done by the scientific board of the review, co-workers with whom we have strong relations of partnership and mutual support in the development and course of some conjointed research projects.

I wish to the review many and consistent issues.

Prof. Floarea Nicolae, PhD
President of Senat Bioterra University Bucharest

Editorial Board's Allocution

„Bulletin of Scientific Information" magazine was published at the initiative of several young researchers with the direct support of Bioterra University Board, having the first edition in 1998.

Years passed and this magazine has enriched continuously its scientific and didactic dowry, becoming slowly but surely a veritable platform for academic information.

In 2008 the magazine changed itself into a new more dynamic and attractive format, being published in special graphic conditions (full-color) and fully in English language. Also, since 2014 the magazine benefits of a modern website: www.bsi.bioterra.ro.

Every year the editorial team has increased the number of members; nowadays it brings together numerous personalities of the scientific and academic world from different foreign countries, thus being a guarantor of a high scientific level.

Thanks to all our readers and collaborators that through their suggestions, criticisms and feedback contribute to the improving of our magazine quality.

Prof. ATUDOSIEI Nicole Livia, PhD
Vice Rector of International Relations

Prof. GALAN Catalin, PhD
Vice Rector of the Educational Activity

Summary:

BULLETIN OF SCIENTIFIC INFORMATION

TYPES OF ECOTOURISM DEVELOPED IN PROTECT AREA COMOROVA - NEPTUN

Prof. Ph.D Ion NICOLAE, Prof. Ph.D Marian NICOLAE,
Prof. Ph.D Floarea NICOLAE, Student Ph.D Simona TURCU,
Lecturer Ph.D Dana Gabriela CONSTANTINESCU
Bioterra University of Bucharest, No. 81, Gârlei Street, District 1, 013722, Bucharest, Romania
nicolaebio@yahoo.com

Abstract: *Ecotourism represents any form of sustainable tourism having the main motivation in observing, using and conservation of nature, of its biodiversity, of local traditions regarding also the use of human resources in the areas of interest. Nowadays, when environment pollution level triggered alarming quota for the planet health, the ecological tourism based on personal and direct experience within the nature has the aim of its protection having as a priority the educative feature of the man, seeing as a main moderator of the environment's components. With this purpose, the professors and researches of Bioterra University of Bucharest, have initiated and transposed the activity of sustainable ecotourism, created to provide the best tourism practices in order to preserve the nature and its sustainability. The ecotourism centre of Bioterra University ''Comorova" in Neptun resort represents the experience transposed into reality of a modern concept of total tourism ''all in one" which means various offers touristic services within the same zone, such as: ecological, rest and recreation, cultural, sportive, scientific, creation and medical ecotourism features [4].*

Key words: *ecological, ecotourism, cultural, sporting, entertainment, scientific, medical, responsible, green energy, all-in-one.*

Introduction

The responsible tourism is not another form of tourism, but a different approach of how to travel and leisure, and also a different way to provide travel services "all in one".
The Responsible tourism in its purest sense represents a minimal impact on the environment and local culture. Moreover its goal is not only to generate incomes and jobs for the local community but also to contribute to the conservation of local ecosystems.
The Eco-Tourism is any form of sustainable and sustainable tourism where the main aim is the observation, use and conservation of: nature, biodiversity and local traditions-related to the use of human resources in the areas of import (of interest) [3].
To this end, teachers and researchers from the Bioterra University of Bucharest initiated and implemented sustainable ecotourism activities designed to provide best tourism practices for nature conservation and steadfast development.
The existence of an eco-tourism center in the Comorova woods in the Romanian coast, was and is an ideal and sustainable framework for the development of eco-tourism. Every year thousands of students, pupils and young people from other social groups are taking advantage of the center and its remarkable

facilities in camps organized at national level. All of these makes from Comorova center an European standard in the practice of general tourism [2].

Materials and methods

Overview of the tourist complex Comorova Forest - Neptune

Comorova resort known under this name in the local region, is located in the heart of the forest Comorova and it spread on an area of about 5 ha. The resort is owned by Bioterra University and during the summer it provides facilities like:accommodation, meals, local transport (beach or neighborhoods), leisure activities and spa treatments that can satisfy the current requirements of a high-quality tourism.

The main attraction is considered to be the Black Sea but what makes this resort unique is its location within a secular forests of oaks, along with pine trees and many species of shrubs. Therefore Comorova forest can be considered an "ecological niche" - a bridge between the seaside and forest area. The primary features of this modern tourist complex are quality and elegance, which are reflected into: the villas (with a capacity of 500 beds), pools with sulfur water, saline facilities, sports, bars, disco, restaurant, terrace, cellar , rustic lounge, landscaped barbecue places, etc. and also the catering services offered. Comorova agritourism complex is open to tourists in all seasons having central heating and available staff.

The movment between resorts is ensured by Comorova – Neptune Complex with friendly means of transport using two electric minibuses (supplied by electric batteries and photovoltaics). The trips are linking Comorova Center to: beach, Mangalia and Neptun-Olimp, the south of our sea-side, and the tour of the Mamaia resort.

Results and discussions

Due to the rich and varied tourism potential and the extensive range of the provided travel services different types of tourism can be practiced, the most popular being: tourism for rest and treatment; business tourism; mixed tourism for banting and leisure summer activities (due to ozone air offered by Forest Comorova); recreational and curative tourism in other seasons; cultural tourism (related to visiting neighboring areas where there are monuments of art and architecture, museums and memorial houses); festival tourism related to the major cities on the coast Constanta (Tomis) and Mangalia (Callatis) with cultural festivals - national or international; trade and exhibition tourism, sport tourism, hunting tourism; cure climating spa tourism (air ozone in forest Comorova) in the neighborhoods resorts area for heliotherapy. Also we can organize trips to the Danube Delta and to the Romanian and Bulgarian seaside.

This tourist resort promotes the concept ,,all in one,, (the total tourism in which ecotourism can be found along with other tourism concepts namely: classic tourism, cultural, spa, sports, entertainment, business, academic and formative activities - applied all brought together in the same area that discerning travelers everywhere to the highest standards.

Types of tourism in Forest Complex Comorova:

1. Eco-tourism – represents the subject of this communication and it is justified by the existence of natural elements and human contributions such as:

• Forest Comorova representing the Green Gold of the Romanian coast;

• The representative symbol of the area

Fig. no. 1 - Wind turbine

Fig. no. 2 - Photovoltaic panels and solar panels for hot water

is the oak (with copies of more than 300 years protected by law) with whom were intercalated species of fir, spruce, cedar and white cedar in a landscape of exceptional harmony;

• Moreover there is a mini plantation of fruit trees (apricot, peach, apple, pear) and vegetable crops grown under ecological conditions for the tourist needs of food.

• The food is provided in special hygienic conditions and the products which are going to the costumer are controlled in accordance with the legislation in force.

• The existence of a modern kitchen, fully equipped and divided in accordance with the rules of the Health Authority - Veterinary and legislation. Food preparation equipment consists of ovens and induction hobs,with high energy efficiency supplied by batteries solar cells and wind generators. The menus offers are based on traditional cuisine without forgetting the fish preparations specific to the coast.

The renewable energy resources (Fig. no. 1 and 2) is used in the complex energy management, as follows:

• The heating of the housing space and domestic water it is mad eusing only renewable electricity from wind and solar sources, obtained directlty heated by solar panels and indirectly through photovoltaic panels batteries

• The Housing space it is heated by IR devices with high energy frequency.

• The using of ecological means of transport (minibuses electric power through photovoltaic panels, Secquoia. ATV and scooters with electric propulsion) in ensuring both tourists traveling in the area, the beach and leisure activities

• In this way were completely removed the polluting energy sources, vey intensive electrical devices with low energy efficiency and a high degree of operational hazard.

2. Tourism leisure and entertainment:

Includes travel packages within are offered both leisure and recreation services and resulted in an exceptional material base with educational content and specific actions for this type of tourism (Fig. no. 3 and 4). The material basis associated with leisure and entertainment tourism include [1]:

• 3 terraces associated wth kitchens, 2 restaurants eight rustically furnished towers and suspended terraces serviced by qualified personnel 3 bars with permanent program;

• Wine cellar with tasting program
• 12 Barbecue grills which can operate simultaneously
• Accommodation, different in architecture and comfort, igenios integrated in the complex space respecting the environment.
• The complex has an accommodation capacity of 500 seats, equivalent to a 3 star comfort category.
• 3 hotels with a capacity of 500 seats;
• 32 rustic cabins with two studios
• 14 family villas (P + 1) - one living room downstairs and two bedrooms upstairs with terraces;
• pavilions with studios and apartments protocol;
• traditional-style wine cellar;
• 160sqm club with associated facilities
• heliport fot the access of the utility helicopter;
• well of sulphurous waters, laboratory certified as having curative properties;
• teraces and paths for walking, environmentally friendly lighting at night;
• daily excursions organized with electrical buses and the decker bus with a capacity of 80 seats.

3. Cultural tourism:
It is linked to the visit of surrounding areas and to the development of cultural and educational activities:
• organizes sightseeing of art and architecture monuments, museums and memorials above;
• folk performances are organized with art students at the University of Bucharest in the Bioterra natural stage offered within the pool and multimedia auditorium of 300 seats;
• evening entertainment (competitions, concerts, literary circles, traditional and modern dances, disco overtime);
• folk with seasonal contract;
• disco with extended hours.

4. Sports tourism
It is very well represented in the complex by highly-equipped base with modern equipment and night facilities, including:
• multifunctional sports grounds with synthetic carpet from Spain, guaranteed 10 years;
• football, tennis, basketball, handball, volleyball;
• Specific paintball field perimeter arranged in compliance with environmental standards;
• table tennis, billiards, darts, chess and rummy;

Fig. no. 3 - Swimming poo

Fig. no. 4 □Reception green transport

• contests and competitions of the season;
• swimming courses organized within the three pools; tennis courses
• Electronic Secquoia, ATV, scooter electronics.

5. Scientific and creative tourism

Takes place in dedicated facilities, which allow national and international actions and activities. These include:
• two multimedia lecture of 300-500 seats;
• WIFI coverage with broadband internet, wired by optical fiber;
• In such spaces, have already occurred prestigious events such as:
• International Congress for compiling new maps planet's climate - 2009;
• The scientific session of the Academy of Scientists in Romania in 2009 and 2010
• Interuniversity scientific sessions, national and international, with participants from more than 15 countries;
• international student mobility, symposia and student circles (Italy, Canada, Egypt, France);
• intensive training courses courses for students with low frequency classes.

6. Medical tourism:

Starting this year it is organized medical tourism based on: natural procedures like sulfur water treatments; diagnoses and treatments center with bioresonance; treatments arranged in areas where unprocessed salt is used (salt crystals are active), uncontaminated by toxins or pollution, being extracted from Salina Slanic - Prahova. The air is rich in saline aerosols, negative ions and minerals (natural elements vital to the body). The air purifies and has disinfectant qualities, an the antioxidant and detoxifying and microbial load is 10 times lower than outside (100 germs / m3 of air to 1,000 germs / m3 in urban area). The air humidity is sustained by a fountain which contributes to achieving a good air using a circular current of air which is in permanent contact with the walls of saline. The concentration reach 20 mg / m3, much higher than in natural mines, so it shortens the time required for treatment, hydromassage, targeted therapies made after Oriental traditions, medical rehabilitation techniques, etc.

Other actions in favor of responsible tourism

To maintain control of the environment, biodiversity conservation, and pollution grade the creation of laboratories was considered appropriate and imperative, as follows:
• National Laboratory of physico-chemical, cf. RENAR Accreditation Certificate no. Ll 946 / 23.01.2012
• Laboratory environment, equipped with the latest generation equipment and technology;
• Laboratory for the study of renewable energy.

For work done in the complex, it was considered appropriate also the existence of network for specialisation training, reflected in the establishment and authorization of a unique specialization in Romania, as well as study program called "consumer and environmental protection", which had visit RQAAHE authorization 8-10 March 2012, obtaining a favorable operating.

The development and ecological rehabilitation of infrastructure Comorova Complex Neptune, Department of European Projects, developed by applying the competition and winning grants / European projects with EU funds, such as:
• "Together for green horizons", part of "education and public awareness program aimed at environmental protection", financed from the Environment Fund, registered with AFM, no. 75174 / 21.09.2010, the financier

Environment Fund Administration.
Curricula project is circumscribed logo: "The earth is life for all" and concepts "Eco", or in other words :
• "Inspired future breathable expirat.Inspira future!"
• "People eco eco think, feel eco, eco act!"
• "Take atitudine.Pedaleaza green"
• "Comorova - Forest seaside" - project approved
Source of funding: Regional Operational Programme 2007-2013 (Nr. Registration: SV / 2/5 / 5.3 / B / 579 / 20.10.2010)
Priority 5 - Sustainable development and promotion of tourism
Area of Intervention 5.3 – Promoting of the potential tourism and creating the necessary infrastructure to increase Romania's attractiveness as a tourist destination.
Operation - Development and consolidation of domestic tourism by supporting specific products and specific marketing activities.
• A project POSDRU approximately EUR 800 000, the stage of development - project implementation

Conclusions

From the above it can be seen that the concept of total tourism - "all in one" has found fertile ground in the complex expression "Forest Comorova - Neptune", giving every tourist a comprehensive framework to integrate all the tourist type activities in a unique location provides psychological comfort, physical, cultural diversity, and sport specific knowledge of the area and exploring in particular the activities of spa tourism.

References

[1] Bioterra University Bases and tourist complexes, no. 1/2011, Ed. Euro Academia, ISSN 1582-0254
[2] Cooper, C., Fletcher, J., Gilbert D., Wanhill, S. - „Tourism, Principles and Practice", Longman, Harlow, 1998
[3] Weaver David (2001), Ecotourism, Milton, Australia: John Wiley & Sons;
[4] www.bioterraturism.ro

ADMINISTRATION SYSTEMS OF THE MYCOTOXIC RISK: CONTRIBUTIONS AT THE INCIDENCE OF SOME MYCOTOXINES IN FOOD PRODUCTS

Student Ph.D Simona Laura TURCU, Prof. Assoc. Ph.D Sergiu MEICA
Bioterra University of Bucharest, No. 81, Gârlei Street, District 1, 013722, Bucharest, Romania
simona.caradan@gmail.com

Abstract: *The geographical position and climate of our country supports the mouldiness of the cereals, oily seeds, vegetalles, fruits and fodders, which can be mycotoxigen risk. OMS signals the endemic evolution of a cronical Balkan nephopathy necrosant as a result of the mycotoxines indigestion. The legal regulations impose the supervision and monition of the mycotoxines in the food products presence.*

Key words: *mycotoxines, Alfatoxine, Ochratoxine, Zearalenona, food products.*

Introduction

Studies about the extensibility and intensness of the presence of mycotoxines in food products. We are going to disness about the incidence of three mycotoxines: B1, M1 Alfatoxine, Ochratoxine and Zearalenona (Figure 1, 2 end 3).

The food products studied were: maize and wheat grains, rice, nuts, ground nuts to estabilish the Aflatoxine. Milk as a raw material and bladder cheese for the M1 Aflatoxine. Rasted grain coffee and raisins for Ochratoxine. Wheat floor, small bakery products and cereals for breakfast for Zearalenona.

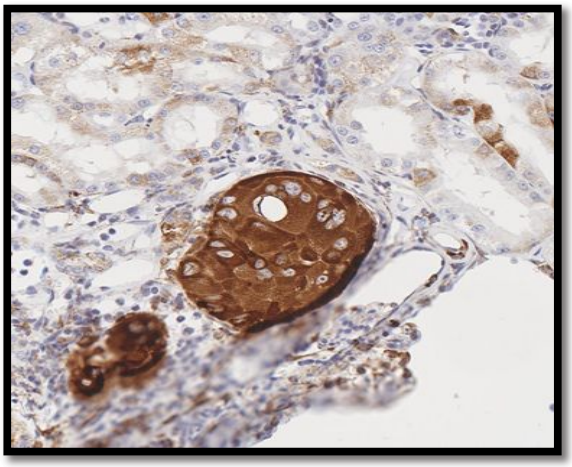

Fig. no. 1 Aflatoxine, microscopic image (Source: www.journalducameroun.com)

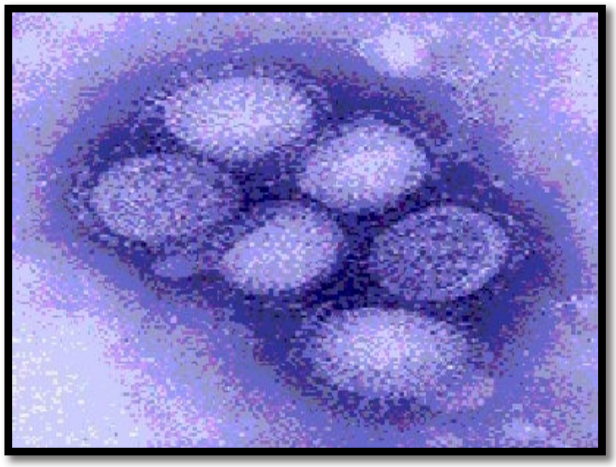

Fig. no. 2 - Ochratoxin, microscopic image in human tissue (Source: www.mdpi.com)

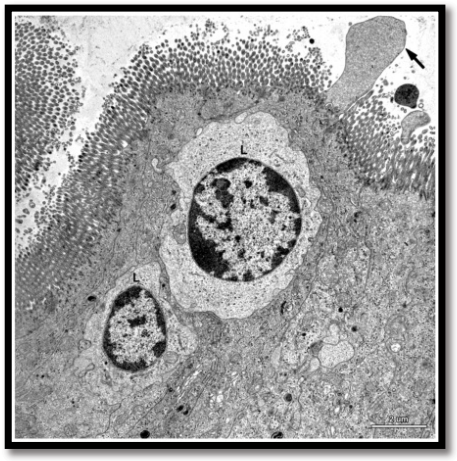

Fig. no. 3 Zearalenona, microscopic image in pig tissue (Source: www.mdpi.com)

Materials and methods

There were analysed 156 food samples between September and November 2015, 4 samples a month.

» The determinations were made by ELISA method

As an analytic biochemistry assay, ELISA involves detection of an "analyte" (i.e. the specific substance whose presence is being quantitatively or qualitatively analyzed) in a liquid sample by a method that continues to use liquid reagents during the "analysis" (i.e. controlled sequence of biochemical reactions that will generate a signal which can be easily quantified and interpreted as a measure of the amount of analyte in the sample) that stays liquid and remains inside a reaction chamber or well needed to keep the reactants contained.

It is opposed to "dry lab" that can use dry strips – and even if the sample is liquid (e.g. a measured small drop), the final detection step in "dry" analysis involves reading of a dried strip by methods such as reflectometry and does not need a reaction containment chamber to prevent spillover or mixing between samples.

As a heterogenous assay, ELISA separates some component of the analytical reaction mixture by adsorbing certain components onto a solid phase which is physically immobilized.

In ELISA, a liquid sample is added onto a stationary solid phase with special binding properties and is followed by multiple liquid reagents that are sequentially added, incubated and washed followed by some optical change (e.g. color development by the product of an enzymatic reaction) in the final liquid in the well from which the quantity of the analyte is measured.

Results and discussions

The determinations results were revealed in from tables 1, 2, 3 end 4.

Conclusions

It was noticed the presence of 30 per cent mycotoxines and of the total amount of the examined samples. At any positive sample it wasn't noticed an exceeding of the maximum limits admitted.

B1 Alfatoxine was revealed at 33 per cent of the examined samples with the maximum value of 2,5 µg/kg at the ground nuts and the maximum of the 0,2 µg/kg at the rice.

The M1 Alfatoxine was detected at 25 per cent of the examined samples of bladder cheese. The content of M1 mycotoxine was revealed between 0,02-0,05 µg/kg.

The Ochratoxine was found in 41 per cent of the examined samples with values between 0,5-2,0 µg/kg. Zearalenone was revealed at 17 per cent of the samples with values between 3 and 25 µg/kg.

In the paper it was emphasized the necessity of applying some programs mycotoxigen

Table no. 1 - The results of Aflatoxin B1 (µg/kg)

No. crt.	Food	Number of samples examined	Pozitive samples	%	Extreme values detected	The maximum limit
1	Corn grains	12	5	42	0,5-2,0	5,0
2	Wheat grains	12	3	25	0,5-2,0	2,0
3	Rice	12	2	16	0,2-1,0	2,0
4	Walnuts	12	7	58	0,5 -2,0	5,0
5	Hazelnuts	12	3	25	1,0-2,5	8,0
	Total	72	24	33	-	-

Table no. 2 - The results of Aflatoxin M1 (µg/kg)

No. crt.	Food	Number of samples examined	Pozitive samples	%	Extreme values detected	The maximum limit
1	Milk raw material	12	3	25	0,02-0,05	0,05
2	Bellows cheese	12	5	42	0,02-0,05	0,05
	Total	24	8	33	-	-

Table no. 3 - The results of Ochratoxin (µg/kg)

No. crt.	Food	Number of samples examined	Pozitive samples	%	Extreme values detected	The maximum limit
1	Roasted coffee beans	12	6	50	0,3-1,0	5,0
2	Raisins	12	4	33	0,5-2,0	10,0
	Total	24	10	41	-	-

Table no. 4 - The results of Zearalenone (µg/kg)

No. crt.	Food	Number of samples examined	Pozitive samples	%	Extreme values detected	The maximum limit
1	Wheat flour	12	3	25	5-25	75
2	Bakery products small	12	2	16	3-10	50
3	Cereal for breakfast	12	1	8	5-20	50
4	Total	12	6	17	-	-

risk control in the food products based on the HACCP system applied from " pitch fork to fork".

References

1. Banu C. şi colab. (2010) – „Tratat de industrie alimentara: probleme generale", Ed. ASAB, Bucuresti;

2. Brewer Joseph H.et. All (2013) – „Detection of Mycotoxins in Patients with Chronic Fatigue Syndrome", US National Library of Medicine National Institutes of Health; 5(4): 605–617, Apr.;

3. Meica S. (2011) – „Siguranta alimentelor", Editura Sitech, Craiova;

4.www.efsa.europa.eu/en/topics/topic/mycotoxins;

5.en.wikipedia.org/wiki/ELISA;

6.www.mdpi.com;

7.www.journalducameroun.com.

RESEARCH ON THE IMPACT OF LAND DYNAMICS IN THE CONTEXT OF SOCIO-ECONOMIC DEVELOPMENT OF RURAL POPULATION IN THE SLANIC PRAHOVA AREA

Prof. Ph.D. Cristian Ovidiu SIMION,
Lecturer Ph.D Dana Gabriela CONSTANTINESCU,
Lecturer Ph.D. Mariana SIMION, Lecturer Ph.D. Roxana Marilena CIOBANU,
Student Ph.D Simona Laura TURCU

Bioterra University of Bucharest, No. 81, Gârlei Street, District 1, 013722, Bucharest, Romania

Abstract: *This paper research the existing territorial disparities in the Slanic Prahova area, related to many aspects of natural-climatic and socio-economic elements which determine generating business environment elements. Currently farms, agritourism base, partially cover non-agricultural activities to support the rural population in the area, thereby not fully capitalizing local resources. These are reasons to be known farming / non-agricultural activities in the dynamics of their development and their impact on the viability sustainable farms.*

Key words: *land fund, value reliability, socio-economic development.*

Introduction

In the Slanic Prahova area was assumed that the tasks of economic development, determined the rate of population movements, which were permanent. For the analyzed area, the economic potential problem is based on the current concerns of rural communities and manifested through their attractiveness and guidelines of political, social, religious, which occurred in a not too distant past [4].In the rural communities in the Slanic Prahova area may show by description and location, the characteristics of Prahova County in terms of administrative territorial this county is located in the central-southern part of Romania, north of Muntenia historical province, the southern slopes of the Carpathians, along Prahova and Teleajen river courses.

Within these limits the county covers an area of 4716 km^2 (1.98% of Romania's territory) and a population of 86,000 inhabitants [1]. Population density in Prahova County reaches the highest values in the country. If in terms of area, Prahova County ranks in the group of small counties, the large number of people has led to a density twice the national average, respectively 186 inhabitants per km^2.

Materials and methods

To analyze the current situation of the land in the Slănic-Prahova area, was organized a survey of knowledge and evaluation of the agricultural and non-agricultural activities in the Slănic Prahova area. In order to know all the aspects of these activities the investigations were carried out at the

level of the farms from the area of the 10 localities in the Slănic Prahova area for which 30 questionnaires were used. It was taken into consideration the going through several steps related to: the purpose of the investigation, the territorial frame of the 10 localities from Slănic Prahova, the questions elaboration, the carrying out of the quiz and the analysis of the data in the questionnaires. The research carried out targeted the Aluniş, Bertea, Cosminele, Izvoarele, Ştefeşti, Slănic, Teişani, Vălenii de Munte, Vărbilău, Vîlcăneşti şi oraşele Slănic-Prahova and Vălenii de Munte communes.

Regarding the structure of teh questions one may say that they have been differentiated at the level of all communities and a number of 3 exploitations/farms for each of the 10 localities.

Results and discussions

In terms of administrative organization, Prahova County has 104 local government units, of which 14 urban (2 municipalities and 12 towns) and 90 communes. Major cities: Ploiesti (county seat), Azuga, Băicoi, Boldeşti Scăeni, Breaza, Câmpina, Comarnic, Mizil, Plopeni, Sinaia, Slănic, Urlaţi, Vălenii de Munte.

Slănic Prahova area comprises 10 towns, which in administrative terms includes 8 communes (Aluniş, Bertea Cosminele, Izvoarele, Ştefeşti, Teişani, Vărbilău and Vîlcăneşti) and two towns (Slănic Prahova şi Văleni de Munte).

The territory is located in the middle of the county with a total area of 37,869 ha (the values shown in Table 1)[1].

Compared to the whole county, this area is 8.02% of Prahova County and 1.08% of the entire region of South Muntenia development area. Also from the surface structure analysis significant differences are found between towns. Accordingly, between Izvoarele commune, holding 7000 ha and Vălenii de Munte with 2159 ha only, as to the county is 1.48% and 0.46%, respectively of the total South-Muntenia development Region is 0.20% and 0.06%. Regarding to the built-in plot area of Slănic Prahova, it can be seen that out of 5892.7 ha, localities Izvoarele, Văleni de Munte, Slănic, Vărbilău; Teişani and Aluniş occupies the largest share (fig.1), (the relative numbers of all the 100% total, the levels of these areas are: 16,97%; 14,83%; 10,9%; 10,35%; 10,05 %)[1].

» The level of the resident population in Slănic Prahova area highlights issues differentiated in the rural communities of the entire area, but also of the entire county, the data presented in table 2 emphasize the differences of the residents in the the territorial structure between 2008-2012. Significant problems can be considered as follows:

- Prahova County resident population, which in 2008 had 827,512 people, in 2012 reached 817,632 people, which represents a decrease of -1.20%. The situations of the rural population emphasize the same downward trend, but with a reduced tendency (decrease for the same period comparability is -0.32%);
- The structure of towns belonging to the area Slănic Prahova, stable population is the largest in Vălenii de Munte, followed by Vărbilău, Slănic and Izvoarele. The level of the decrease within the residents in the 2008-2012 dynamic is maintained with different rhythms, mostly lower than the rural level of the Prahova County. The resident population in the commune Cosminele decrease recorded in 2012 compared to 2008 is a decrease of -4.50%, in Slănic with -4,10 %, and in other places this population decreases stable varies between -1,7 % şi -0,30 %.[1]

Table 1 - Administrative and territorial organization of the rural area in Prahova Slănic

Specify	Total area			Surface plot		Number of village		
	ha	% to		ha	%	no.	% to	
		total county	total region				total county	total region
Total, Prahova county, in which:	471.587	100	13,69	x	x	405	100	20,059
Slănic Prahova area	37869	8,02	1,08	5892,7	100	30	7,39	1,498
Aluniş	2.678	0,57	0,08	592	10,05	2	0,49	0,10
Bertea	5.232	1,11	0,15	370,3	6,28	2	0,49	0,10
Cosminele	2.506	0,53	0,07	286,4	4,86	4	0,99	0,20
Izvoarele	7.000	1,48	0,20	1000	16,97	6	1,48	0,30
Ştefeşti	4.458	0,95	0,13	444	7,53	3	0,74	0,15
Slănic*	3.920	0,83	0,11	760	12,9	0	0	0
Teişani	2.928	0,62	0,08	610	10,35	5	1,23	0,25
Văleni de Munte*	2.159	0,46	0,06	862	14,63	0	0	0
Vărbilău	4.260	0,90	0,12	642	10,9	5	1,23	0,248
Vilcăneşti	2.728	0,5784	0,08	326	5,53	3	0,74	0,15

Primary data base of calculation: surface region =3445300 ha; no. village region=2019 (last year 2012 existing data). * → villages falling within the administrative city.

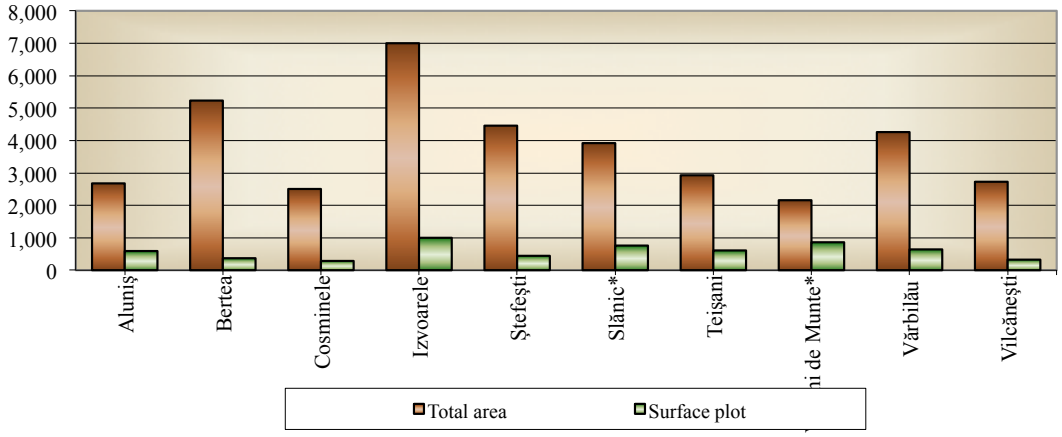

Fig. 1 - Total area and the area of land in the Slănic Prahova area

Table 2 - Stable population dynamics in the rural area of Prahova Slănic

Specify	2008	2009		2010		2012	
	number of persons	number of persons	% with 2008	number of persons	% with 2008	number of persons	% with 2008
Total county, in which:	827512	823509	99,51	821013	99,21	817632	98,80
- in rural areas, in which localities:	406690	406142	99,86	406141	99,86	405428	99,68
Aluniş	3735	3722	99,65	3713	99,41	3646	97,61
Bertea	3456	3435	99,39	3415	98,81	3380	97,80
Cosminele	1199	1194	99,58	1179	98,33	1145	95,50
Izvoarele	6926	6897	99,58	6866	99,13	6808	98,30
Ştefeşti	2486	2478	99,68	2478	99,68	2481	99,80
Slănic	6958	6872	98,764	6750	97,01	6673	95,90
Teişani	3987	3960	99,32	3938	98,77	3901	97,84
Văleni de Munte	13590	13574	99,88	13527	99,54	13401	98,61
Vărbilău	7314	7275	99,47	7301	99,82	7275	99,47
V□lcăneşti	4044	4032	99,70	4037	99,83	4032	99,70

Source: Own (according to data from the questionnaires used in the study)

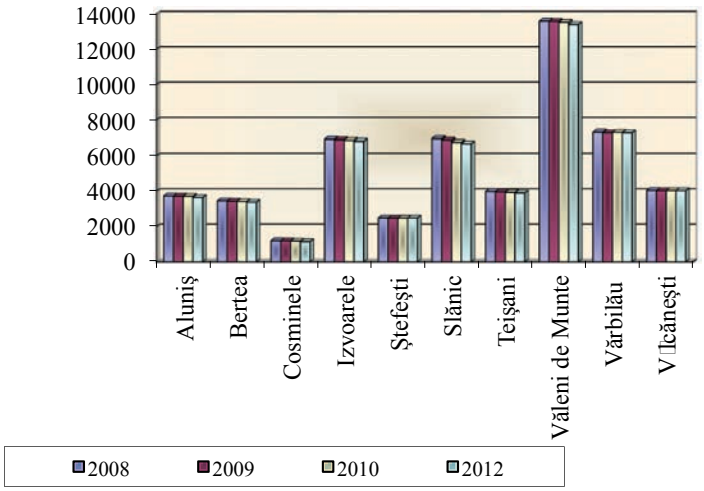

Fig. 2 - Stable population dynamics in the rural area of Prahova Slănic

In the Slanic Prahova area, for the town Slănic was analyzed for the period 2007-2012 dynamics, population movement, along with MIG (minimum income guaranteed).
In absolute and relative levels are shown in table 3, from which we can deduce the following [1]:
- residence changes in the town records submitted to the differentiated rates. There is an upward flow in 2007-2009, with reference to 2009 the number of departures with 85 home is maximum, representing 202.38% compared to 2007. Between 2010-2012 decreases the number of such departures in 2009 reached 60 persons, which is 142.85% compared to the base year 2007;
- for the period 2007-2012 in Slănic city embossed side migration which contributes to diminishing population and the sharp decline in the birth rate is the lagged effect of migration of final departure, plus sharp decline in fertility. All this results decrease the rural population in the analyzed area.
Area Slănic Prahova, the middle part of the space Prahova County, dominant profile industrial and agricultural secondary favorable conditions for the development of horticulture, viticulture and livestock.
For this reason the main economic activities of the inhabitants are engaged in these sectors to joining processing of agricultural and rural services. In this context multidimensional structure study was focused on the situation of land and farm situation Slănic Prahova area.

Table 3 - Population movements and the guaranteed minimum income in the locality Slănic

Years	Departures to home		Settling with home		Guaranteed minimum income	
	number of persons	% with 2007	number of persons	% with 2007	Lei	% with 2007
2007	42	100	68	100	34.169	100
2008	75	178,57	60	88,23	41.459	121,33
2009	85	202,38	61	89,70	54.374	159,13
2010	61	145,23	67	98,52	49.417	144,62
2012	60	142,85	67	98,52	67.382	197,20

Source: Own (according to data from the questionnaires used in the study)

determinations were fluctuating population, however manifested a downward trend during 2007-2009 (year 2009 is a decrease of -10.30% compared to 2007), after that in the coming years 2010–2012, this decrease is reduced (reduction in these years is only -1.48% compared to 2007);
- the guaranteed minimum income, analyzed the dynamics same period has a constant rate of growth. In 2012 this indicator reached 67382 lei, representing an increase of 97.20% compared to 2007.
From all this, the population structure is

» The land and its structure in the Slanic Prahova area. Agro-economic zoning in relation to land use suitability includes most municipalities in agricultural areas with dominant functions, specialized in vegetable crops. The structure of the land of this area is quite varied. For this reason research profile was within 11 Prahova counties of agricultural production areas, and the area Slănic Prahova the following profile: fruit-wool-milk-potatoes. Designation of areas was based on soil types and size of the communal territory.

Table 5 - The structure of land area in 2012 in Slănic-Prahova

Territorial location	Total farmland (ha)	in which the main categories of agricultural use:						Forestry
		Arable land		Pastures and hayfields		Orchards		
		total ha	% of the total agricultural	total ha	% of the total agricultural	total ha	% of the total agricultural	total ha
Total area of the localities:	18225	1849	10,15	13920	76,38	2455	13,47	15551
Aluniş	1761	144	8,18	1478	83,93	139	7,89	472
Bertea	2323	10	0,43	1913	82,35	400	17,22	2299
Cosminele	1197	95	7,94	1036	86,55	66	5,51	1182
Izvoarele	2343	313	13,36	1565	66,79	465	19,85	3633
Ştefeşti	1262	46	3,65	863	68,38	353	27,97	3074
Slănic	2709	46	1,70	2448	90,37	215	7,94	831
Teişani	2243	408	18,19	1725	76,91	110	4,90	447
Vălenii deMunte	1106	336	30,38	654	59,13	116	10,49	522
Vărbilău	1934	223	11,53	1206	62,36	504	26,06	1845
V□lcăneşti	1347	228	16,93	1032	76,61	87	6,46	1246

Source: Own (according to data from the questionnaires used in the study)

Within these areas of agricultural production for location Vălenii de Munte, the evaluation notes of use categories and main crops (N-natural and E- enhanced) are the following [4] :

- solvency notes by use: arable land: N- 36, E- 57; vine crops (wine) N- 17, E- 21, orchards (apples and pears) N- 6, E- 15; pastures N- 25, E- 34; hayfields N- 28, E- 38;
- notes evaluation for main crops are following: wheat N- 41, E- 63; corn N- 32, E- 55; sunflower N- 31, E- 45; sugar beet N- 36, E- 64; potato N- 36, E- 65; vegetables N- 26, E- 48.

Value crops evaluation notes highlights the natural suitability of land for different cultures of this area [1].

Effectively area Slănic Prahova territorial structure of land located in rural communities, as shown in table 5 highlights the following issues:

- the analysis of area-wide land Slănic Prahova shown a preponderance of forests, with categories of pastures and hayfields (occupying 76.38% of the total agricultural). However other categories of agricultural land occupies reduced surface (for weights of total arable farming and orchards are 10.15% and 13.47%);
- same structure analysis of land for the 10 localities, reveals significant discrepancies. Forests in the municipalities Izvoarele and Ştefeşti occupies an area of 3633 ha and that 3074 ha, is the largest forested area in the studied area (fig. 3).

For the biggest agricultural land in rural areas are Bertea, Izvoarele, Slănic, Teişani and Vărbilău (area of the surface being between 2243 ha and 2709 ha). By type of agricultural use is also differentiated situation, being able to mention: arable land in areas where Teisani, Vălenii de Munte

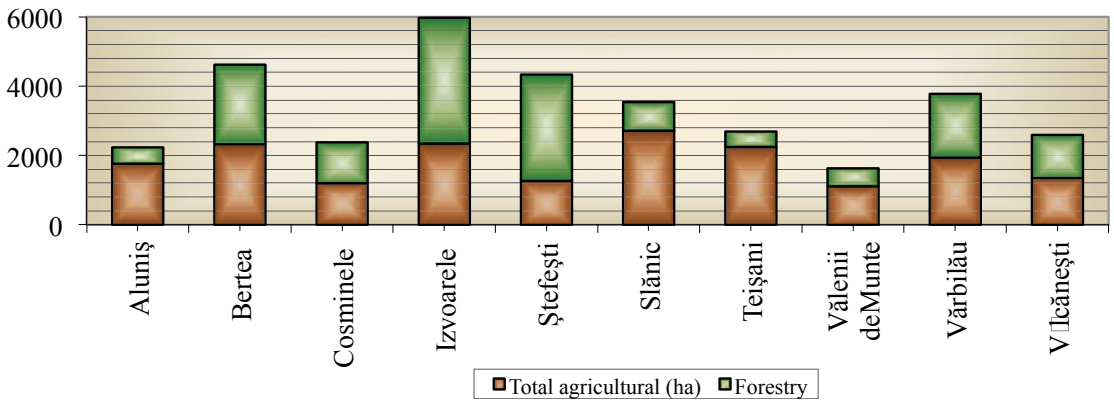

Fig. 3 - The structure of land area in 2012 in Slănic-Prahova

and Vîlcăneşti holds significant shares in total agricultural (18,19 %, 30,38 % and that 16,93 %); pastures and hayfields with the largest share (between 86.35% and 59.13%); orchards for which differentiated areas fall within amplitudes between 504 ha in common Vărbilău and 66 ha in common Cosminele (which is 26.06% and 5.51% of the total agricultural land of the community). In the studied region were identified land in classes I - III suitability for use as arable land [1]:

- class I. - the share of agricultural land with very good quality soils without limitations when used as arable land is reduced - approx. 3,87 % of total agricultural area;
- class II - consists of land suitability good and low limitations for field crops - 21.14% of total agricultural area;
- class III - the suitability middle with moderate limitations - occupies 30.5% of total agricultural area.

With reference to the use of natural pastures in the following types analyzed:

- hill-mountain pastures, which are usually located outside city limits is mountainous and communal pastures.
- grasslands, which are of special economic importance to the area, although they are strongly degraded by erosion of surface and depth. Rearing this alpine pasture was and is a major economic solution every year for 3-4 months can be maintained large flocks of animals, especially sheep and young cattle, with minimal costs.

In connection with the share of land allocated per capita surfaces in table .6 levels of these surfaces are shown in comparison with the total Prahova County, lifting the relief following [1]:

- for the whole area Slănic Prahova, 34,55 ha infield / inhabitant , is exceeded to Prahova county assembly with 2.85%, and an excess of 60.38% for forests;
- the same indicators in the structure of settlements in the area Slănic Prahova, highlights the differentiated situations or very low per capita farmland in rural Vălenii de Munte and Vărbilău (their share to the whole county is between 24.56% and 79.13%); per capita areas in the county, the existing situation in the municipalities Vîlcăeşti and Izvoarele (weights were between 99.44% and 102.44%); large areas per inhabitant in Cosminele, Bertea, Ştefeşti and other (weight is between 311.18% and 143.77%).

The situation of forest area per capita is similar to that of agricultural land. Types and activities in the rural area holdings Slănic Prahova reveals that most are individual and is the most important agricultural

Table 6 - Share of land area per capita distributed in the Slănic Prahova area in 2012

Territorial area	Infield		Forestry	
	ha/ inhabitant	% to county	ha/ inhabitant	% to county
Total: Prahova county	33,59	100,00	18,38	100,00
Slănic Prahova area	34,55	102,85	29,48	160,38
in which:Aluniş	48,29	143,77	12,94	70,41
Bertea	68,72	204,58	68,01	369,98
Cosminele	104,54	311,18	103,23	561,52
Izvoarele	34,41	102,44	53,36	290,27
Stefesti	50,86	151,41	123,90	673,96
Slanic	40,59	120,84	12,45	67,73
Teişani	57,49	171,15	11,45	62,32
Vălenii de Munte	8,25	24,56	3,89	21,18
Vărbilău	26,58	79,13	25,36	137,95
V□lcăneşti	33,40	99,44	30,90	168,09

Source: Own (according to data from the questionnaires used in the study)

Table 7 - Territorial structure of the number of farms within the area Slanic Prahova (last year with existing data) 2012

Territorial area	Number of holdings	% faţă de:	
		total county	total area
Total county	311625	100,00	X
Slănic Prahova area d.c.:	22252	7,14	100
Aluniş	1430	0,46	6,43
Bertea	1650	0,53	7,41
Cosminele	725	0,23	3,26
Izvoarele	3500	1,12	15,73
Ştefeşti	978	0,31	4,39
Slănic	3289	1,06	14,78
Teişani	1800	0,58	8,09
Vălenii de Munte	4729	1,52	21,25
Vărbilău	2527	0,81	11,36
V□lcăneşti	1624	0,52	7,3

Source: Own (according to data from the questionnaires used in the study)

activity. An advantage for these occupations was the fact that during the communist period the majority of these were common cooperativized in this regard is well organized inhabitants. Currently the number of farms in the territorial structure of the analyzed area can be considered significant. Regarding this situation, the data presented in table 7. highlights the following:

- wide zone number 22252 is 7.14% holding to the whole county Prahova;
- in the structure of settlements in the area, may be considered a situation in Vălenii de Munte, Izvoarele, Slănic and Vărbilău, where the number of households is between 21.25% and 11.36% over the entire area. Other places within a small number of households (between 3.26% and 7.41%)[6].

Table 8 - Structure of farm land spread over Slanic Prahova area (last year with available data) 2012

Territorial area	Infield		Forestry	
	ha/ exploitation	% to county	ha/ exploitation	% to county
Total, Prahova county	88,14	100,00	48,23	100,00
Slănic Prahova area	81,90	92,91	69,88	144,88
in which: Aluniş	123,14	139,71	33,00	68,42
Bertea	140,78	159,72	139,33	288,86
Cosminele	165,10	187,31	163,03	337,99
Izvoarele	66,94	75,94	103,80	215,19
Ştefeşti	129,03	146,39	314,31	651,62
Slănic	82,36	93,44	25,26	52,38
Teişani	124,61	141,37	24,83	51,48
Vălenii de Munte	23,38	26,53	11,03	22,88
Vărbilău	76,53	86,82	73,01	151,36
V□lcăneşti	82,94	94,10	76,72	159,06

Source: Own (according to data from the questionnaires used in the study)

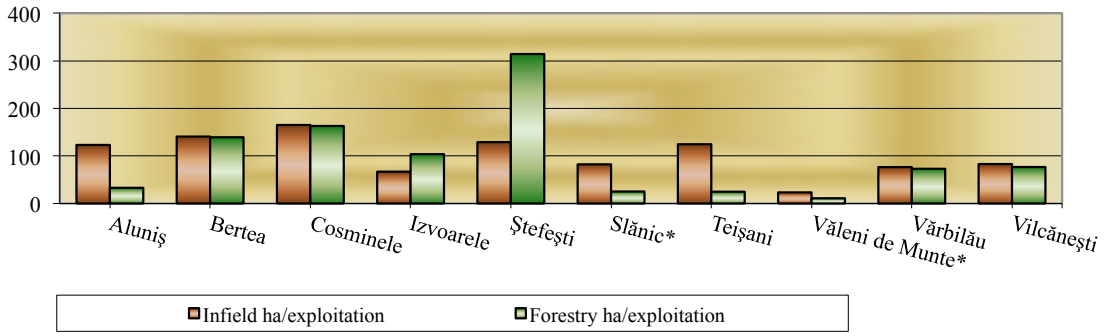

Fig. 4 - Agricultural land and forests spread over the farm in rural area in Slănic Prahova year 2012

This whole can emphasize on the one hand common situation Cosminele with the lowest number of farms and at the same time the largest agricultural area per capita, and on the other hand at the two urban (Slănic and Vălenii de Munte), with a large number of farms and small areas per capita.
For this reason it's necessary to know the level of agricultural and forest area per holding (the expression ha / farm, fig. 4) and percentage (% of total Prahova county). The structure of these levels of the indicators listed is shown in table 8, resulting in the following [1]:
- Slanic Prahova area at the agricultural land per holding is 81.90 ha, representing 92.91% of total county. The forest area is 69.88 ha / holding, compared with the entire county is 144.88%;
- same indicators analyzed in the structure of the 10 cities included in the area Slanic.

» Prahova are marked differences being able to delineate two situations:
a) returning holdings to agricultural land under the 82.94 ha as Vălenii de Munte, Izvoarele, Vărbilău, Slănic and Vîlcăneşti. At the same localities situation forest areas per capita is similar. The relative numbers of these indicators are below the county average;
b) farms with large areas of farmland and forests on the holding over 123.14 ha, as Cosminele, Bertea, Ştefeşti, Teişani and Aluniş. In these indicators than the county average.

Conclusions

Powers of economic development determined the rate of population movements, which had definitive character. The economic potential problem area analyzed is based on the current concerns of rural communities and manifested through their attractiveness and guidelines of political, social, religious model, which occurred in a not too distant past.
For the period 2007-2012 in the Slănic area setteling with home were fluctuating, however keeping a downward trend for 2007-2009 (in 2009 there is a decrease of -10.30% compared to 2007), then in 2010-2012, this decrease is reduced (reduction in these years is only -1.48% compared to 2007);
The analysis of area-wide land fund Slănic Prahova shows mainly forests, along with pastures and meadows (covering 76.38% of the total agricultural fund). However the other categories of agricultural land occupies small areas (for arable farming and orchards the weights of total arable land are 10.15% and 13.47%);
All these differences of economic sectors, the agricultural sector of Slanic Prahova is due to both natural and geographical conditions, but also the socio-economic development. Regarding agriculture, it appears that we can rarely encounter state held agricultural sectors, agricultural activity being carried out only in individual households or small associations of citizens on land they own. Correlating this with occupancy of households, we have seen the necessity for the development of industry and trade areas, followed by services, construction and then other activities.
Because of the geographical conditions, piedmont and mountain villages, where arable land is very low in total agricultural area, emphasize the low level of area per capita and per farm respectively.

References

[1] Constantinescu Dana (2011) – „Thesis Researches on the Agritourism in Slănic Prahova and its possibilities for development“, USAMV Bucharest, Romania;
[2] Local City Development Strategy Slănic 2008-2015;
[3] Oancea Margareta (2007) – „Management, economic management and strategy agricultural units“, Ceres Publishing House, Romania;
[4] Pilot study (2002) – „Update landscaping plan Prahova county“, Volume II, December, Romania;
[5] Simion C., Farcas N., Profeanu G., Simion Mariana (2007) – „Management of agricultural establishments, catering and rural development“, Cermaprint Publishing House, Romania;
[6] Prahova County Council, Department of European Integration (2008) – „Sustainable Development Plan of Prahova County in 2007-2013“.

THE EFFECTS OF USING FERTILIZERS TO WHEAT CROPS

Lecturer Ph.D. Dana Gabriela CONSTANTINESCU,
Prof. Ph.D. Cristian Ovidiu SIMION, Lecturer Ph.D. Mariana SIMION,
Lecturer Ph.D. Roxana Marilena CIOBANU,
Lecturer Ph.D. Cristina Elena NEDIANU
Bioterra University of Bucharest, No. 81, Gârlei Street,
District 1, 013722, Bucharest, Romania

Abstract: *In this paper the researches are focused on the need to promote local agro-tourism, which will be aimed at communicating an image to be outlined: originality of agro products, agro and features of the potential of the area; logistics planning conception of the whole household and rural community; opportunities to practice other forms of tourism in socio-cultural context. These forms and structures of strategic objectives in agro Slănic Prahova area were rendered differently at territorial level, aiming at shaping sustainable competitive strategies. The agrotourism seen from the point of view of the effects it has on the rural households appears as a version of the development of the rural environment, especially in the areas with difficult life conditions such as the ones in the piedmont and mountain areas, which are considered as disadvantaged areas and which can hardly offer sustenance only from agriculture and livestock farming. In this context it is necessary to know that the tourism of the present stage shows requests for a territorial infrastructure and a level of comfort that is satisfactory to good. Therefore, all of these have imposed that in the Slănic Prahova area these facto existing utilities be known, and as a result their potential can be shaped from evaluations and the questionnaires' results.*

Key words: *agro-tourism, the piedmont and mountain areas, livestock farming, social-economic development*

Introduction

The agrotourism in Slănic Prahova can be considered as an alternative for the revival of this area. The economic life of the studied communes should be analyzed and through agrotourism must be revived and developed but it is necessary for other domains to be driven: agriculture, zootechnics, industry, trade and forestry.

The village and the rural household in the Slănic Prahova area represent territorial areas where for the agrotourism activites carried out an accessible degree of utilities which constitues a base of potential agrotourism infrastructure exists.

Materials and methods

For the analysis of the actual situation of the agrotourism in the Slănic-Prahova area, an investigation for the knowledge and evaluation of the agrotourism activities in the Slănic Prahova area was organized. In order to know all the aspects of the agrotourism aspects investigations were carried out at the level of the farms with possibilities to carry out some agrotourism activities from the

area of the 10 localities in the Slănic Prahova area for which 30 questionnaires were used. It was taken into consideration the going through several steps related to: the purpose of the investigation, the territorial frame of the 10 localities from Slănic Prahova, the questions elaboration, the carrying out of the quiz and the analysis of the data in the questionnaires.

The research carried out targeted the Aluniş, Bertea, Cosminele, Izvoarele, Ştefeşti, Slănic, Teişani, Vălenii de Munte, Vărbilău, Vîlcăneşti şi oraşele Slănic-Prahova and Vălenii de Munte communes.

Regarding the structure of teh questions one may say that they have been differentiated at the level of all communities and a number of 3 exploitations/farms for each of the 10 localities.

In the farms included in the study, at the level of the 10 localities, the questions were focused on the knowledge of the structure of social – demographic characteristics of the population, the location and territorial utilities of the farms, the main activities carried out within the householding, the structure of the accomodation offer and utilities in the households, the main activities carried out within the rural households with agrotourism potential, the professional knowledge regarding the carrying out of agrotourism, the affiliation to the local forms of association of the rural households.

By types of closed and open questions significant problems which could partially be quantified and introduced in the tables were searched for. The cumulation of the 30 answers to the questions (closed and open) have been included in <30< levels. And this due to the cases in which: the analyzed phenomenon does not exist in a household; the analyzed phenomenon for only one household is present in more characteristics of the sme question [1].

Results and discussions

» Location and potential of the territorial infrastructure in the Slănic Prahova area

The rural communities in the Slănic Prahova area are formed of villages. Regarding the „tourist village" one may say that it is defined as rural, picturesque settlement located within a natural, unpolluted environment, keeper of traditions and a rich historical past which complies with the function of welcoming and accomodating tourists for a stay on an undetermined period. By its cultural, historical, etnographic, natural and social – economic values such that the village in the analyzed area can become a highly original and brand tourism product for the local tourism.

The agrotourism seen from the point of view of the effects it has on the rural households appears as a version of the development of the rural environment, especially in the areas with difficult life conditions such as the ones in the piedmont and mountain areas, which are considered as disadvantaged areas and which can hardly offer sustenance only from agriculture and livestock farming.

In this context it is necessary to know that the tourism of the present stage shows requests for a territorial infrastructure and a level of comfort that is satisfactory - good. Therefore, all of these have imposed that in the Slănic Prahova area these de facto existing utilities be known, and as a result their potential can be shaped from evaluations and the questionnaires'results.

By questions of the analyzed characteristics (the closed and open form), in table1 it is shown the location and territorial utilities of the farms included in the study from which the following resulted:

- the distance between the farms and the center of the locality is for the majority of

the households between 500-1000 m, after that the distances below 500 m and over 1000 m are structured;
- regarding the distance of the household from the nearest town it is found that 2/3 of the farms are located at distances of 5-20 km. The distances between 1-5 km (26,66%) are favoured, but the number of households whose location is below 1 km is very low (6,66 %);
- by analyzing the existence of the means of access within localities it is found that in most of them (93,33 %) the roads are accessible for persons transportation. The route of the national road and railways are limited by these infrastructures (thus having

Table 1 - Location and territorial utilities for the households studied from Slănic Prahova

Analyzed characteristics	Households included	
	number	% (30 households = 100)
1.- Distance between farm and the center of locality (commune)*		
- below 500 m	7	23,33
- 500-1000 m	16	53,33
- 1000-1500 m	3	10
- over 1,5 km	4	13,33
2.- Distance between the farm and the closest town*		
- below 1000 m	2	6,66
- 1-5 km	8	26,66
- 5-20 km	20	66,66
3.- Existence of means of access within the locality		
- reilways	12	40
- persons transportation	28	93,33
- national road	24	80
- European road	0	0
- unmodernized road	0	0
4.- Transportation network and existing utilities up to the farm		
- paved road	27	90
- gravel road	10	33,33
- dirt road	0	0
- low voltage network	27	90
- average voltage network	16	53,33
- drinking water from collective network	18	60
- drinking water from personal sources	17	56,66
- natural gas pipeline	2	6,66
- internet access	27	90

**Closed questions (Σ answers of the analyzed characteristics = 100 %). Cumulating the 30 answers it can be included in the <30<levels. This is due to situations in which: the analyzed phenomenon does not exist in one household; the analyzed phenomenon for only one household is present in more characteristics of the same question.*

the possibility to only 80% and respectively 40 % of the households number);
- the modernization degree of different utilities has the following forms: the paved road which is predominant (90% of the total of the road network), this form is completed with the cobbled road; the electrical network is low voltage (90 %), to which the average voltage is added (53,33 %); regarding the ddrinking water supply the access to the collective network prevails (60 %), with the water supply additions from personal sources (56,86 %); he heating supply with natural gas for the analyzed households is insignificant (6,66 %); the access to internet services is existent for most households (90 %).
Therefore it results that through the social – historical conditions in which it developed, the village and the rural household in the Slănic Prahova area represent territorial areas where for the agrotourism activites carried out an accessible degree of utilities which constitues a base of potential agrotourism infrastructure exists.
At the same time, within the rural communities in Slănic Prahova, malfunctions of the road network can be mentioned generated by [3]:
- mainly the modernized roads (most highways are made of ballast or are paved);
- the incomplete or improper improvement of some traffic intersections;
- transverse profiles with improper size and elements (lack of sidewalk and faulty rainwater drainage);
- the existing built-up area without providing a street network.
Each village in the area has a unique personality and character which include specific features and conditions the existing infrastructure. Under these conditions the village in this area signifies the human dimension, the local intimacy, evoked both through the community superstructure bodies and also through the traditions and customs manifested. Under this multidimensional form people's life in this area has been delimited and presently defines the agrotourism potential.
Hence it results that both rural tourism as well as for the two cities may constitute a strong point of the economies of their communities provided that an investment will be made in the neessary infrastructure to support and exploit the latent existing potential.

» The village household and the agro-tourism attratctiveness
The village household with agrotourism features can be two-dimension characterized in Slănic Prahova, [6]: a) morpho-functional unit, in which the monocellular family lives, being set in a space which belongs to a people (or which becomes as such), a place in which the house and the household dependencies are built, possibly the spaces for agricultural cultivation; b) social – territorial unit formed of a complex of properties (the house and additional buildings) built within a delimited space – the courtyard and the garden belonging to a family jointly living and using the assets acquired; the architectural ensemble, made of house and all additional buildings, grouped within a courtyard or a unit made of the house and the related persons living together having a common budget and jointly capitalizing the assets acquired [2].
In order for the present level of the agrtourism activities to be known it must be showed that in the past the largest part of the rural households in Slănic Prahova was included in a mixed economy, in different rates dealing with agriculture, zootechnics and fruit farming. The mixed character of these households was the expression of need for the rural household to solely produce almost everything it needed for its support.
Thus, the mixed character of the occupations

has directly influenced the structure and functionality of the household which therefore reflected the nature of the and complexity of human works. In this frame the household of this area can be seen from the following points of view: the permanent household within the village limits (which includes the house, the dependencies for animal breed and for for storing food products as well as the fencing, the gate, the well, etc.) and the temporary household.
From an economic – functional point of view these households are divided in the following categories: households with economy focused on animal breed, households with economu focused on agriculture and animal breed, households with economy focused on animal breed and fruit farming; households with economy focused on animal breed and fruit farming and households with mixed economy (more than two occupations, amongst which agrotourism can be included). Out of all of these one may conclude that the two dimensions, the village household and the agrotourism attraction carry out a symbiosis, rendered on the one hand by the

Table 2 - Structure of social-demographic characteristics of the population in the households studied in Slănic Prahova

Analyzed characteristics	Households included	
	number	% (30 households = 100)
1.- Total number of family members within the household*		
- less than 2 persons	3	10
- between 2-4 persons	20	66,66
- between 4-6 persons	7	23,33
2- Number of non working members in the family		
male	15	50
female	16	53,33
3.- Training level of the household members		
- primary school	4	13,33
- gymnasium	6	20
- highschool	14	46,66
- technical school	12	40
- higher studies	18	80
4.- Family members working outside the household*		
- none	6	20
- one	12	40
- two	10	33,33
- three or more	2	6,66

**Closed questions (Σ answers of the analyzed characteristics = 100 %). Cumulating the 30 answers it can be included in the <30<levels. This is due to situations in which: the analyzed phenomenon does not exist in one household; the analyzed phenomenon for only one household is present in more characteristics of the same question.*

form and degree of agriculture activities development and on the other by the existence of the rural structures (the rural household, the farm, the village), the natural environment and the population natural which bear between them complementarity and interdependency relations. Whereas, these are essential elements of agrotourism which determine the attractive element needed for Slănic Prahova, a knowledge rendered by a result of the questionnaries (on the one hand the social - demographic characteristics of the population and on the other the main activities carried out within the household).

» The structure of the social – demographic characteristics of the households studied, according to the synthesis of the questionnaires studied and the quantitative and qualitative aspects presented in table 2., has the following aspects[1]:

- the number of persons within the households studied which represents 2/3 from their total, is of 2-4 persons. Therefore we have a share of 23,33 % for the families with 4-6 persons and only 10 % for the families with 2 persons;
- regarding the number of non working persons, male/female, from the families studied it is found approximately in equal shares;
- the situation of the level of qualification of the members of teh family shows two aspects: the members of teh family have varying degrees of training, but those with higher studies prevail (this can be explained by the existence of 18 such persons out of the total of existing persons in the 30 households), then the highschool and technical schools graduates;
- regarding the family members working outside teh household one may find that the structure differentiates as follows: only one working person in the family (40 %), two working persons (33,33 %), three or more working persons (6,66 %), cases in which no family member works (20 %).

The presentation of this structure is mainly given by the possibilities of other activities which can be carried out in the area of rural communities. In this case, by the study carried out and through the investigations resulted from the interrogations was searched for the successive knowledge of agricultural production capacity and the results obtained within the household. În table 3. the synthesis of these aspects is rpesented thus resulting as follows[1]:

- most households studied have small total surfaces included in the measure of 0,1-0,5 ha (the percentage being of 50 %), households of 0,5 – 1,0 ha (23,33 %), thus showing a percentage level of only 13,33 % of households below 0,1 ha;
- analyzed in structure, the species of animals breed in the household are recording differentiations. The birds is of 86,66 % of the number of households, the pigs 70 %, the sheep only 30 %., and there are no horses in the studied households;
- if the products obtained are taken into consideration one may find that the vegetable and animal products are presented with predominant levels (the percentages are 89 % şi respectively 76,66 %). The crafts obtained in teh households with a percentage of 20% can be considered as forms at a beginning level of crafts activities carried out.

Hence the conclusion that the agrotourism attractiveness shall have to take into consideration the activities carried out in the rural household, to contain objectives and investments to stimulate the creation of agrotourism family hotels to capitalize the the frame created by the agricultural activities, but also the improvement of some recreation areas (it can be given as examples

Table 3 - Main agricultural activities carried out within the rural households studied in Slănic Prahova

Analyzed characteristics	Households included	
	number	% (30 huseholds = 100)
1.- Total surface per household*		
- below 1000 m²	4	13,33
- 1001-5000 m²	15	50
- 5001-10000 m²	7	23,33
- over 10000 m²	4	13,33
2.- Species of animals raised in the household		
- cows	5	16,66
- sheeps	9	30
- pigs	21	70
- horses	0	0
- birds	26	86,66
- no species	2	6,66
3.- Products obtained in the household		
- vegetable products	24	80
- animal products	23	76,66
- arts and crafts products	6	20
- no product	2	6,66

**Closed questions (Σ answers of the analyzed characteristics = 100 %). Cumulating the 30 answers it can be included in the <30<levels. This is due to situations in which: the analyzed phenomenon does not exist in one household; the analyzed phenomenon for only one household is present in more characteristics of the same question.*

the locations on the riverbeds adjacent to the area within the built-up area of the communes), but also the extension of the accomodation capacities and recreation and capitalization of local, county or national events organized in that area.

» The traditional potential of the area is:

1.- The ethnography, the folklore, the museums, the fairs and festivals respresent tourist attractions of the Slănic Prahova area by the potetional offered.

2.- The arts and crafts, as a form of integration in the tourist potential of Slănic Prahova, here including the woodworking and sculpture.

The offer of agrotourism activities and conditioning in capitalizing the tourist potential in Slănic Prahova.

The offer of existing agrotourism activities activităţilor can be considered a result of the ensemble of conditions manifested over the households in the rural area of Slănic Prahova. The main sides of their knowledge aims the accomodation structure which has been analyzed by the infrastructure of the house itself or the favorability of the territorial ensemble in this area. The results of the interactive forms of interrogation carried out represent a study and include the potential which can be taken into consideration in the development of agrotourism, respectively:

1.- Potential of the accomodation offer in the households in Slănic Prahova.

Table 4 - Structure of studied accommodation and utilities with the potential of agro-tourism farms in the area Slanic Prahova

Analyzed characteristics	Households included	
	number	% (30 huseholds = 100)
1.- Equipped rooms for living inside the household*		
- 3	6	20
- 4	14	46,66
- 5 -7	9	30
- over 7	1	3,33
2.- Source of drinking water		
- well	15	50
- coast spring	0	0
- commune pipe-line	20	66,66
3.- Location of toilets		
- inside the house	17	56,66
- in the courtyard of the household	18	60
4.- The existence of the shower rooms*		
- yes	24	80
- no	6	20
5.- Means of heating the wastewater		
- hub/stove	13	43,33
-boiler	15	50
- gas heating/wood burning boiler	4	13,33
6.- Gas source used in the household		
- gas tank	29	96,66
- gas	2	6,66
7.- Means of heating the living space		
- wood stove	24	80
- gas heating	2	6,66
- wood burning boiler	7	23,33

**Closed questions (Σ answers of the analyzed characteristics = 100 %). Cumulating the 30 answers it can be included in the <30<levels. This is due to situations in which: the analyzed phenomenon does not exist in one household; the analyzed phenomenon for only one household is present in more characteristics of the same question.*

They are based on the knowledge of a successive situation which begins from the capacities of the house, the existence of utilities and the degree of comfort.

By the interrogations carried out in the 30 households have been nominated by number and percentage and have been cumulatively shown the analyzed characteristics.

All these aspects are shown in a structured way in table 4 thus resulting:

- the habitable capacity expressed by the number of rooms equipped for living is differentiated (fig.1). Thus, it is found the existence of a number of 4 rooms for most households (46,66 %), and then for 5-7 and 3 rooms (the level being between 30 % and 20 %) (fig. 2.);

- regarding the drinking water resource in the rural households one my find the following situations: most of them (66,66 %) are supplied only from the commune pipe-line or from the well, while another part both from the commune pipe-line as well as from the well;
- the shower rooms for the households studied resulted in having priority (80 %) and only 20 % do not have these installations;
- the heating of wastewater is carryed in the households by boiler installations with hub/ stove (13,33 %), but also by simultaneously holding two or three forms of heating;
- the source of gas used is the gas tank (96,66 %) and only a small number uses the gas network (6,66 %);
- regarding the heating ways of the living space it is predominant the wood stove (80 %), to which wood burning boilers are added

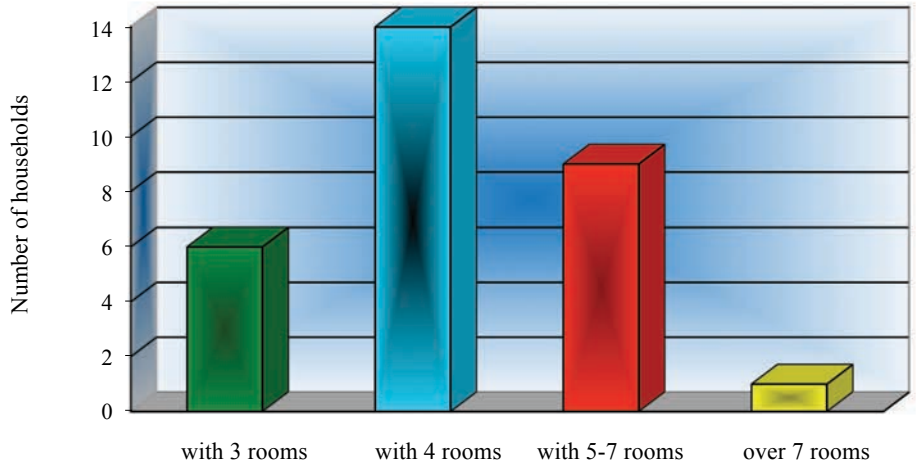

Fig. 1 - Households distribution by the number of rooms equipped for living

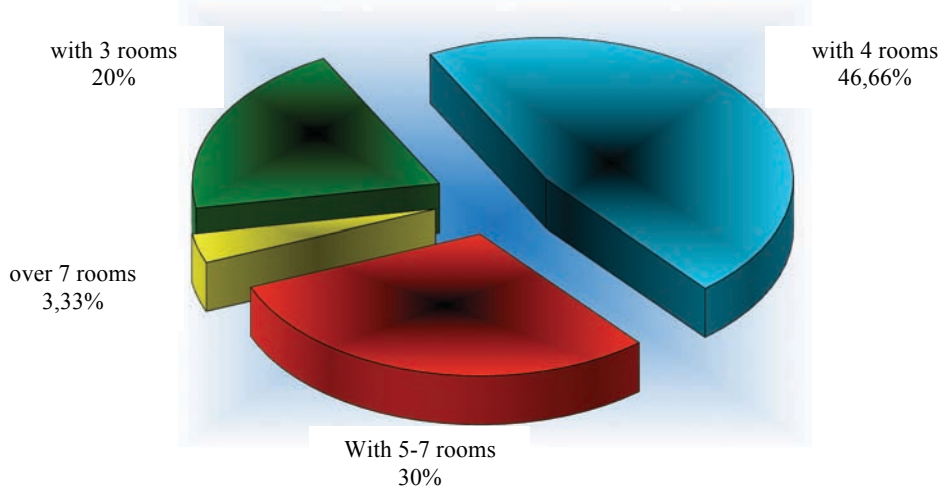

Fig. 2 - The structure of households by the number of rooms equipped for living

(23,33 %) and the gas heating (6,66 %). It is shown the simultaneous existence for the same household of two or three forms of heating.

It results that in the studied rural households there are modern utilities, but for most of them out of these forms of utilities the ones existing in the past are also kept. Thus, the modernization degree of the rural households with agrotourism potential is a result of the utilities supply system for the house. For most households it is found the existence of a higher legel (of acceptability), but also a lower degree (less accepted by the tourist). Actually these differences are manifested from the agrotourism services supply, which are phenomena and processes which take place in a differentiate way in the territory according to the space, time and structural characteristics. Even if spatially and temporarily all units in Slănic Prahova have similar conditions, from a structural point of view there are notably differences regarding the qualitative level of agrotourism services. Thus, the qualitative level of the offer given by the comfort in the rural household definitively influences the degree of attraction of the tourist for agrotourism.

In the case of the two urban centres, Slănic and Vălenii de Munte, the agrotourism

Table 5 - Professional knowledge on applying agrotourism in the households studied in Slănic Prahova

Analyzed characteristics	Households included	
	number	% (30 households = 100)
1.- We have knowledge about the way the agrotourism activity is carried out		
- yes	21	70
- no	9	30
2.- Agrotourism is a chance for economic increase and development for the households in the area		
- yes	27	90
- no	3	10
3.- The existence of the interest for this form of tourism as agrotourism family hotel		
- yes	20	66,66
- no	10	33,33
4.- Accomodation capacity (expressed by the number of places) destined, available in the household		
- none	7	23,33
- 2 places	7	23,33
- 3 places	6	20
- 4-6 places	9	30
- 7-10 places	0	0
- over 10 places	1	3,33
5.- Are there any traditional activities carried out in this household?		
- yes	8	26,66
- no	22	73,33

**The characteristics analyzed for each of the 5 questions are the result of sime closed questions (Σ the answers of the analyzed characteristics = 100 %).*

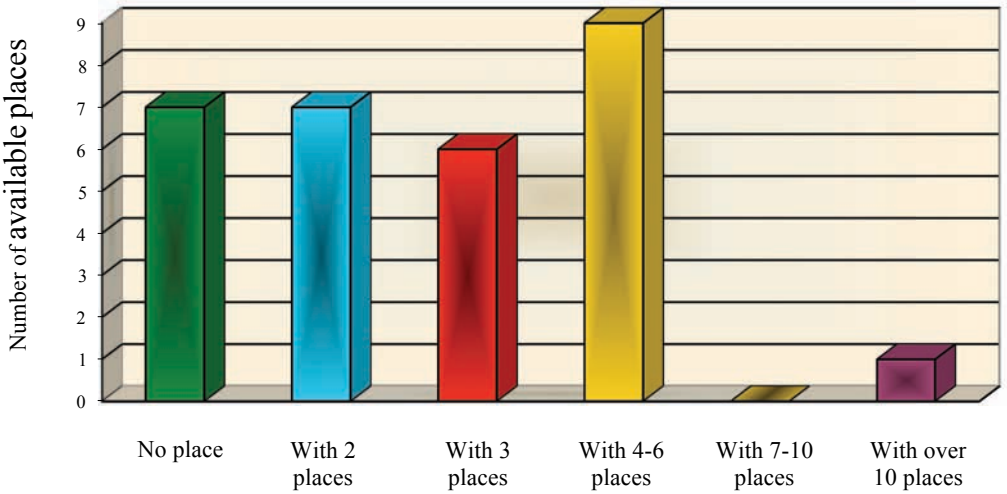

Fig. 3 - Accommodation capacity expressed by the number of available places in the households studied

capacities of accommodation are strongly influenced by the forms of comfort of the other accommodation structures (with special reference to the hotel system existing in these localities). In the city Vălenii de Munte there are the following accomodation forms: two hotels of three stars totalizing 165 rooms and only three family hotels with 65 rooms. One can also add 7 restaurants in which tourists can serve traditional and specific for the area dishes.

2.- Professional knowledge and affiliation to the association forms for the integration of the agrotourism household.

Considered as a potential, the professional knowledge in agrotourism represents, especially in the present phase, a source which can be capitalized by specific ways. Even in the analyzed area these are included in social-professional forms specific for the agrotourism activities.

Actually, in the study carried out by questionnaires it was targeted the knowledge of diversity and the forms of manifestation of the professional knowledge together with conception/tendency for integration of the agrotourism activities in Slănic Prahova. In table 5. It is shown the synthesis of the characteristics regarding the practicing of agrotourism analyzed by questionnaires and which shows the following [1]:

- the existence of a predominance regarding the way in which the agrotourism activities are carried out and only a diminished level does not have this knwledge (30 %);
- most of the persons questioned (90 %) agrees that agrotourism respresents a chance to economic increase and development for the households in this area;
- the interest for the agrotourism activities under the form of agrotourism family hotels is only for 2/3 of the persons questioned while 1/3 are not interested;
- the availabilities of the accomodation capacities are between 2-6 places (73,33 %), together with the existence of certain households which do not have the possibility of these accomodation capacities (23,33 %) (fig. 3 and 4);
- carrying out the traditional activities is at a low level of 26,66 % from the total of households.

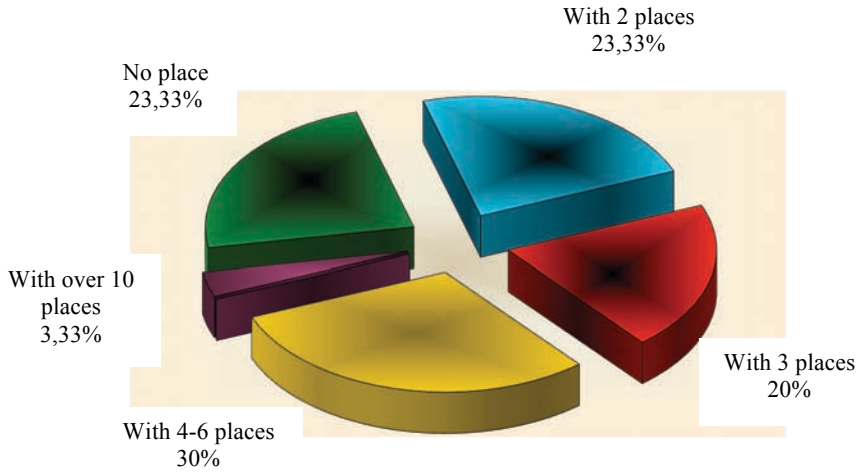

Fig. 4 - Structure of accommodation capacity
expressed by available places in the households studied

Table 6 - Rural households affiliation to local association forms with agrotourism potential studied in Slănic Prahova

Characteristics analyzed	Households included	
	number	% (30 households = 100)
1.- The form to which the household is affiliated*		
- cooperative	2	6,66
- associations	3	10
- group of manufacturers	3	10
- other form	0	0
- no form	26	86,66
2.- If the holding is a member of a previously mentioned form in what cooperative/association is it a member?*		
- manufacture	1	3,33
- supply (marketing)	0	0
- sale (marketing)	0	0
- service supply	3	10
- agrotourism	3	10
- arts and crafts activities	0	0

** The analyzed phenomenon does not exist in only one household; (the situation is present in more characteristics of the same question). The cumulation of the 30 answers can be included in the levels <30<.*

An advanced form of the capitalization of agrotourism potential in these areas was targeted by the affiliation to the local association forms. The same interpretation form of the questionnaires synthetizes in table 6 the form of association affiliation of the rural households with agrotourism potential. The following aspects can be emphasized:

- most of the households studied (86,66 %) are not affiliated to the forms of association in the territorial area in which they are placed. Percentage levels represented by coperative, associations and groups of manufacturers are reported (the levels being 6,66%, 10 % and 10 %);
- regarding the specification of activities it turned out that the households studied are recorded in the before mentioned cooperative/asociation forms, are included in the forms of manufacture, service supply and agrotourism (the percentage levels being 3,33 % and 10 %).

According to the cases previously presented the association of the households to the cooperative/association forms may determine the following situations: a) the preponderance of rejection for the affiliation of the households to the cooperative/ associations forms, this being considered as a mentality of indiference and/or fear for these forms of organization; b) teh case in which the same household is part of more forms of affiliation to a cooperative/association, hence one may infer the existence of some orientations and even some more advanced knowledge.

From here one may infer that the degree of integration of the activities is poorly represented in he territory bith for the agricultural activities as well as for the agrotourism.

3.- Forms of acting of the existing associations with agrotourism activites in Slănic Prahova.

Because whithin the analyzed area the Association for Tourism Promotion in the Higher Bassin of the Telejeanului Valley and the Mountain Tourism Association in Prahova, the knowledge of the events in the territory for these association units was considered necessary.

One may show that Association for Tourism Promotion in the Higher Bassin of the Telejeanului Valley [4] includes 10 localities as founders out of which only 3 are included in the analyzed area Slănic Prahova: Izvoarele, Teişani and Vălenii de Munte.

The effect of these organizations in the territory was materialized in the increase of the average measure of the agricultural households and the annual average income per household through a better capitalization of the products.

The natural conclusion which can be drawn is that the degree of complexity of the non agricultural activities in the analyzed area is still reduced.

Conclusions

» Based on this sequential knowledge of the agrotourism capacities structured in the territory at the level of the area Slănic Prahova, the analysis has a special role through the metodological singularity to include all the factors that determine especially the delimitation and implementation possibilities of the agrotourism potential. From these arguments it results the special role of the analysis precisely through the outlining of the main problems the implementation deals with. [5] .

» Both the natural tourism resources, as well as the anthropic ones which are based on knowledge of some factors which refer to favourable conditions for the development

of different forms of rural tourism; natural, cultural historic potential for the tourism development; the existence of accomodation capacities and the possibilities to increase the quality level of the services supplied; the diversity of the food products and a diversified, rich cultural offer; the existence of an ethnographic and folklore treasure of high originality with a rich calendar of tradictional fairs and folklore events throughout the entire year are representative for the tourism potetial in Slănic Prahova.

» The advantages of the area are determined in the evolution of the external factors which can positively influence.

» These can be delimited by the following factors: the development of business tourism and reunions which may take place in the localities of teh studied zone (Aluniş, Slănic, Văleni de Munte); the revival of the itinerant cultural tourism for the knowledge of some parts of the area with tourist value; the arts and crafts activities; the possibility to develop the transit tourism; increased possibilities for the conversion of salt mines by tourism.

» Through analysis methodology that we adopted to be allowed the identification of the interal and external factors which affect the rural family hotel and the quantifying of the impact on it.

» Hence it results the need to shape some strategic objectives in the agrotourism of the area Slănic Prahova to provide a diversification of the activities by which effective changes of labour force with an orientation in the directions desired be carried out.

References

[1]ConstantinescuDana(2011)–"Researches on the agrotourism in Slănic Prahova and its possibilities for development", PhD Thesis, USAMV Bucharest, Romania;

[2] Dumitrescu, I. - „The traductional rural household in Vâlcea", Internet (http://www.muzee-valcea.ro/buridava/BURIDAVA6/dumitrescu.pdf);

[3] S.C. ECOSAFE CONSULTING S.R.L. – „Environment report, General Urban Plan, Vîlcăneşti Commune", County Prahova, Romania;

[4] Founding of the Association for the Tourism Promotion and Development in the Higher Bassin of Telejeanului Valley, Annex 2, The Decision of the Prahova County Council, Ploieşti, Romania, Articles of Incorporation, May 15th 2009;

[5] Romania's SWOT analysis as tourist destination, Internet (.regielive.ro/.../analiza_swot_a_romaniei-4479.html..); the Plan of sustainable development of Prahova county within the period 2007-2013, the Prahova County [6] Council, Department for European Integration, 2008;

[6] Toşa, I. (1986) – „Contributions to the study of Romanian rural settlements", Processed after other sources: Bihar, XVI, Oradea, p. 347;

[7] Ionescu, G. (1981) – „Architecture in Romania over the centuries", Processed after other sources: Academiei Publishing House, Bucharest, p. 65.

THE HUMAN CAPITAL – FOUNDATION NATIONAL SYSTEM OF INNOVATION IN THE INNOVATIVE ECONOMY

Mirela STOICAN [1], Adina Liana CAMARDA [2], Mihai MARES [1], Culai DASCĂLU [1], Nelly FILIP [3], Lina VLĂSCEANU [1]
[1] Bioterra University of Bucharest, No. 81, Gârlei Street, District 1, 013722, Bucharest, ROMANIA
[2] George Baritiu University of Brasov, ROMANIA
[3] Academy of Economic Studies of Moldova, REPUBLIC OF MOLDOVA
jercalai@yahoo.com, adinaturism@yahoo.com, maresmihai@yahoo.com, culaidascalu@yahoo.com, nfilip@mail.ru, linavlasceanu@yahoo.com

Abstract: *The progress in developing countries contributed to the formation of the new economy, knowledge economy, innovation, new technologies and business venture. The human capital is the foundation of this new economy.*

Key words: *new economy, knowledge economy, innovation, innovation economics, human capital, National System of Innovation.*

Introduction

In recent years a general mood was created about the role of human capital in economic growth and the formation of "new economy" as a necessary step in economic evolution of society.

The New economy is based on knowledge and ideas, key factors to the creation of high standards of living where ideas and innovative technologies are essential.

» Theoretical background

In the professional literature, the "new economy" is perceived as a complex phenomenon and interpreted differently by economists. There are used different names: the "new economy" post-industrial society, postmodern society, information, knowledge, "net-economy", "digital economy", "virtual economy", but all have contemporary features of society development. In the post-industrial society are found the information society, knowledge and science society [1]. All these are based on innovative ideas of human capital, resulting in innovative nature of post-industrial society and its role in building them. In our opinion the next stage of post-industrial society is the innovative

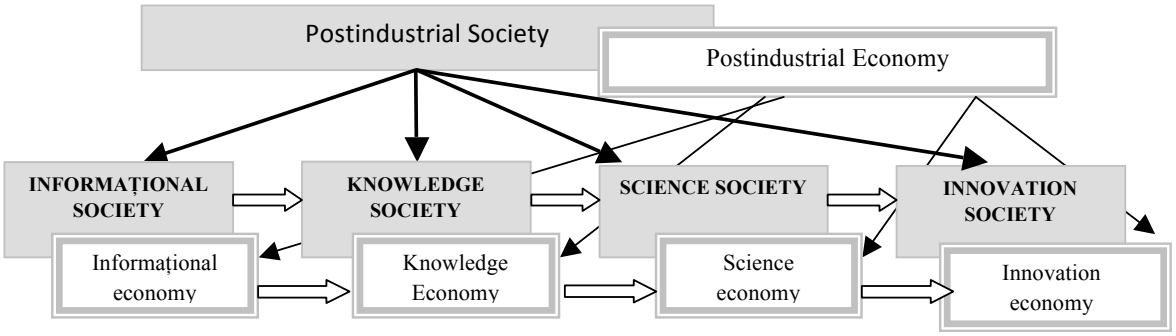

Fig. 1 - Postindustrial society phrases

society, determinant of the innovation economy, as necessary step in the evolution of society. Synthesizing the opinions of foreig and native authors about the postindustrial society, the author establishes the correlation between the expressions of the new society (Figure1).

Materials and methods

» Hypotheses of the research consist in the deepening and developing the concept of human capital and efficiency in the formation of innovative economy.

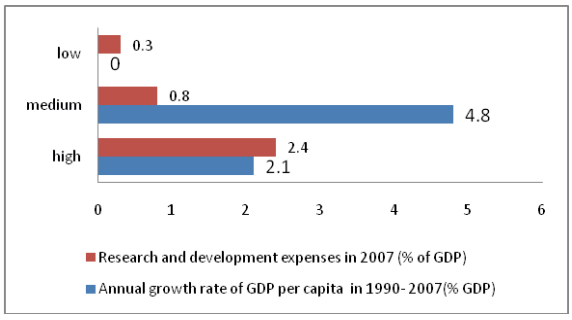

Fig.1 Annual growth rate of GDP per capita and Research and development expenses by the development of countries

The achieving of the goal led to formulate the following objectives:

- the argumentation of the importance of human capital as a prerequisite for the development of innovative economy and its multiplier effects;
- the shaping of economic policies and increase efficiency of human capital and its creative potential;
- the development on the strength of recommendations on investigations under the National System of Innovation training effectiveness.

» Means and tools of research

The methodological basis of research knowledge is dialectical method, device and philosophical categorical general systems theory, comparative analysis method.

Results and discussions

Innovative economy is the economy of knowledge-based society, innovation, the positive acceptance of new ideas, systems and technologies and their implementation in various spheres of economic activity. This is a type of economy based on innovation

Table 1 - Innovative design features

Romania	Republic of Moldova
Liberal ideology only in privatization of state and business.	Liberal ideology too simplistic.
Financial sources both internal and external.	External financial sources which are fluctuating due to remittances from abroad.
The average work motivation.	A lower motivation to work.
Transposition of the results is done moderately.	Innovative passive (slow implementing the ideas into reality).
Fundamental research is characterized by external expertise.	Fundamental research is characterized by external expertise.
The brain drain effect continues to be an obstacle to the proper development of the national economy.	Export of labor resources which appears as a brake on economic development.

flow, the constant technological perfection, the production and export of high tech products with high added value and export of technologies [2]. Basic notions of innovative economy are: innovations, innovative activity and innovative infrastructure [3]. This type of economy is based on human capital as a measure of individual skills and qualities made from investments which are actually used, leading to increased productivity and income. These qualities of human being have opened new horizons in individual perception of economic phenomena, based on innovative ideas that give rise to innovative economy.

The particularities of human capital in the innovative economy have multiplicative value that consist in the fact that, after the process of production, newly created value in the input exceeds its output. As a result, the author proposes the following definition of human capital in innovative economy representing all socio-economic relations on the formation and accumulation of knowledge with innovation multiplicative effect. Individual human capital is crucial for innovation activity and the representation of a nation's human capital can be an expression of relevant skills for innovation. According to these skills we can say that the innovative component of human capital represents all intellectual capacities of the worker to generate new knowledge and achievement in its structure with the physical capabilities and those intellectual of the worker. Its structure includes the following elements: education, training, reproductive capacity and renewal of knowledge, skills and personality types, health and genetic background, motivations, migration ability. Skills of innovation is expressed through the annual growth rate of GDP per capita, share of GDP spending in this area, number of patents, number of staff involved in research, development and innovation, all of a link between them and economical increase.

1.The annual growth rate of GDP per capita World states lie at different rates of GDP per capita, which is, in 2009, the highest for Luxembourg - U.S. $ 78,395, U.S. - 46381 USD, Switzerland - 43007 USD [4], while the Republic of Moldova - only 2843 USD, by purchasing power parity [5].

2. Regarding the expenses on R&D in the EU in 2007 has allocated 229 billion research and development. CD costs as a percentage of GDP, which rose from 1.85% in 2007 remained stable compared to 2006. The highest intensity of CD was recorded in the Nordic countries and Austria and Germany.

In 2007, expenses as a percentage of GDP CD (CD intensity) was highest in Sweden (3.6% of GDP) and Finland (3.47%) followed by Austria (2.56%), Denmark (2.55%) and Germany (2.54%) and lowest values and is registered in Cyprus (0.45%), Slovakia (0.46%), Bulgaria (0.48%) and Romania (0.53%).

In 2010, the economic crisis has deeply affected research in Romania, the total allocations for research, public funds, is approximately 1.64 billion lei, which represented an increase of 8.6% since 2009 (1, 53 billion), but only a return to around the year 2008 and well below the planned launch of the National Research and Development and Innovation 2007-2013, about 4 billion. States with a higher share of R & D expenditures in GDP have a better position in global competitiveness rankings, resulting in the need to increase investment in science.

3. Patents per 1 million people in 2000-2005, 189 were in high human development countries (Korea 1113, Japan 857, Sweden 166, Romania 24, Chile 1, Bosnia and Herzegovina 3).

4. Employment in R&D in 2007 the equivalent of 2.3 million people working full time in the EU-27. CD staff corresponded to 1.6% of total employment, the highest proportion being in Finland (3.25 of total employment), Sweden (2.7% in 2005), Luxembourg (2.6 % in 2006), Denmark 82.4% in 2006) and Austria (2.1% in 2006), and the opposite stands Romania (0.5%), Bulgaria (0.6%), Cyprus (0 , 7% in 2006), Poland (0.8%) and Portugal (0.9% in 2006).

Researchers representing 0.9% of total labor EU-27 in 2007, this proportion varies in Romania and Finland in 2005 to 2.1%. Staff on CD, at the end of 2009 in Romania, operating in research and development 42,420 employees, decrease of approximately 1082 employees from the one recorded at the end of the year 2008.

On the background of global economic developments recorded globally in 2008, there is a tendency to focus government efforts to effectively use innovative capacity of human capital.

Before the economic crisis of 2008, the firms were concerned to maintain market position by reducing costs for standardized products. For this stage, they must take concrete measures by which investors turn to technology and innovation sector. Faced with new challenges, Romania is facing a fragile economy, uncertain, and this time that minimizes the role of knowledge and effective transfer of new technologies. Given the macroeconomic situation of Romania in 2008-2010, it is estimated that Romania is in the domination of classical macroeconomic environment and the competitiveness of Romanian economy is far surpassed by the EU Member States.

In this circumstance, in which Romania has the rank 64 of 133 worldwide, in terms of competitiveness, technological information and knowledge are required to constitute key factors of renewal and sustainable growth. In terms of innovative component, the author made an analysis by comparing the average performance results in Romania from EU27. The results are based on analysis of elements such as institutions, human potential, information and communications technologies, market development, business development through the innovative environment, the ecosystem of innovation, openness to foreign and local competitors, scientific achievements and creative activities as an element of Innovative Capacity Index (ICI). According to the Global Innovation Index 2009/10, Sweden is the top position fall index (0.871), followed by Denmark (0.834) and Finland (0.810) and the last position is located in Romania (0.136) and Bulgaria (0.130)[6]. Placing on the last places of Romania and Bulgaria demonstrates the low degree of openness of political society and economic development implementation and application of elements of a knowledge society without setting priorities in this regard and without the use of existing infrastructure before ‘89. The author concludes that developed countries have high levels of correlation between the degree of development and innovation, this situation being true for Romania but in reverse. Poor economic results recorded once again confirms that the modest activity of the Romanian companies in the CD-I is a divergent path towards the EU. The main reasons identified are:

- the low volume of financing for CD-I, Romania is among countries with the lowest investment in this area, only 0.58% in 2008. The situation worsened in 2009 when public spending returned to the level existing before the boom, 0.2% of GDP respectively;
- the increasing of the public debt and budget constraints from the IMF agreement raises questions about Romania’s ability to increase

public expenditure on education innovation and short and medium term even if the National Strategy for Research, Innovation 2007-2013 provides for the allocation of significant amounts in this sector;
- poor cooperation on innovation especially weak link between academic research and industrial applications;
- weak development of clusters, in Romania was encouraged development of industrial parks at the expense of clusters, and the Romanian government was not financially involved but was limited to a business information on the major role that those have in competitive economic development;
- human capital deficiency in the CD-I, mainly due to lack of interest given to the sector and lack of motivation to young researchers.

Based on these facts, the major role of human capital in the formation of the National Innovation System, is materialized as a solution to speed up implementation and development of innovative economy. But, above all, should be considered the importance of innovation infrastructure, namely the role played by technoparks, business incubators, clusters, business angel and, not least, of venture capital in the formation of a reliable and performant National Innovation System.

Innovative infrastructure in all countries is formed with the full participation of the state. Formation of innovative infrastructure in Romania is one of the main directions of the country's development and integration into global innovation system.

This can be achieved through a stable innovative policy and using the levers of state structural reform-oriented branch and creating innovative growth models [7].

It should be noted however, that each economy is characterized by evolving with specific characteristics that customize and individualize it.

The stability of an economy is relative and it depends on global economic and social context, so it is necessary for the innovational management to pursue to continually adapt to these changes [8]. The author carried out a parallel between this innovative model from Romania and Moldova (Table 1).

From the presented analysis, the author notes that Romania meets the business model innovation more than Moldova, primarily due to the advantage of being a member of the EU. It should be noted that each of these faces a major problem, namely a high degree of corruption, which is an obstacle for the development of innovative activity.

To transform the economy of Romania in an innovative development, the main task is setting staged the National System of Innovation [9].

Research conducted in Romania about the National System of Innovation allowed the determination of the fundamental problems of formation and use of innovative human capital, embodied in a SWOT analysis (Table 2).

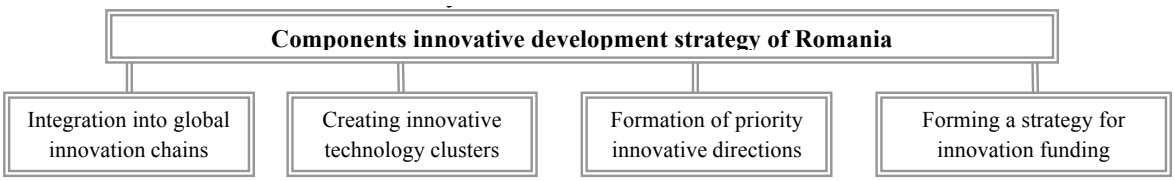

Fig. 2 - Components of innovative development strategy in Romania

Tabelul 2 - SWOT analysis of SNI in Romania

STRONG POINTS	WEAK POINTS	OPPORTUNITIES	THREATS
▪ the existence of a framework for stimulating innovation activities, research - development; ▪ the existence of a network of research and innovation that have some experience in the field and qualified human potential; ▪ significant increase of budgetary funding for research, innovation, technology transfer and innovation infrastructure creation, so that by 2020 they reach 2% of GDP; ▪ a number of patents registered annually compared to 1 million inhabitants, the European average; ▪ high level innovators, holders of claims in international salons of inventions; ▪ share of exports of products of medium and high technology (*high tech* products are considered those with a content of innovation based on about 3.5 to 8.5% of their M & IT), 50.14% total exports in Romania, compared to 47.36% EU 27 [10]; ▪ share of exports of	▪ low level of innovation culture in both productive and service sector and research institutions and innovation; ▪ lack of information, especially statistics on the innovation activities of companies and businesses; ▪ deficiencies of the educational system for training and continuing education of specialists in the management of innovation, protection, evaluation and marketing of intellectual property rights; ▪ weak involvement of private sector in the activity of CD-I; ▪ insufficient motivation of young people to follow careers in research; ▪ poor collaboration between universities and private sector business; ▪ poor of Romania's participation in Framework Programme FP7; ▪ partial contracting by private beneficiaries of structural funds for CD-I SOP IEC Priority Axis 2; ▪ weak venture capital financing.	▪ continuous growth in demand for innovative products and technologies; ▪ the existence of the legal framework for the development of beneficial public-private partnerships in innovation and technology transfer through the initiation and implementation of joint projects (consortia / clusters, technology platforms, etc); ▪ capitalization of funding mechanism through the Structural Funds; ▪ increase of integration in education, research, innovation and entrepreneurship; ▪ increase of motivation and prestige of innovators; ▪ expanding international cooperation on CD-I, in the EU and beyond; ▪ continuation of EUREKA Eurostars programs , part of the EUREKA network to harmonize and synchronize national programs to support SMEs with research activity; ▪ supplementation of Nucleus Program IFIH-HH with a new project for ELI	▪ Continuation of exodus of skilled professionals in the field of innovation research into other fields and in other states; ▪ low level of attractiveness for youth activities in innovation compared to other activities related to modern advanced technologies; ▪ regional gaps in development of innovation processes especially in EU regions; ▪ insufficient degree to achieve the rights on thr objects of intellectual property.

services with intensive contribution of knowledge, a total of 44.91% export services in Romania, compared to 49.43% EU 27; ▪ Romania's participation in actions of Joint Research Centre, EUREKA programme; ▪ Enrollment of Romania as a full member of the ENIAC Joint Undertaking - a public-private partnership in nanoelectronics in 2009; ▪ scientific research is present in almost all areas, particularly in priority 7, where, according to Strategy Action Plan, Romania will lead a project to set up a dedicated pan-European research activities in the Danube river, Danube Delta and Black Sea; ▪ full contraction of the structural funds allocated through SOP IEC Priority Axis 2, by the public beneficiaries; ▪ accession of Romania to the initiative of establishing the Association of Technology Parks Black Sea region.		(Extreme Light Infrastructure - Nuclear Physics).	

Conclusions

1. Global processes taking place at the beginning of the III-rd millennium related to accelerating the development of the tertiary sector, individual production, intellectualization of human activity, creating an efficient information system, etc. forming a new motivational mechanism. are the premises of post-industrial economy, which requires creative interpretations by economics.

The changing of the role of the individual, his intellect transformation into a decisive factor of the progress of society, argues the need to form a new development paradigm. Its essence lies in the transition to a new level of socialization, the changing of development priorities and the transfer from the anthropocentric to technocratic approach, oriented towards the needs and human capabilities.

2. Human capital in innovative economy represent all socio-economic relations on the formation and accumulation of knowledge innovation multiplicative effect, that consist, after the production process, in the newly created value that at the input exceeds its value at the ouptut. The innovative component of human capital represent all intellectual capacities of the worker to generate and to achieve new knowledge, containing both physical and intellectual capacities of the worker.

3. The research of human capital role in innovative economy, undertaken in this paper permit the assessment of the real situation in Romania, reducing negative effects of economic crisis that continues, determining priorities in conceptual reasoning reforms aimed at achieving strategic goals of long-term development. These priorities are to create conditions for training and accumulation of human capital, the development of those branches. Also Romania should collaborate effectively with countries where there is a rapid development of innovative economy, of a national innovation system strongly included in innovative global economy, based on production and export of intellectual products, knowledge and information.

4. The practice making of the CD-I strategies in Romania will have positive impact and help to: enhance national economic competitiveness on domestic and foreign markets through the implementation in economic practice of scientific achievements and innovation, increasing the scientific and innovative support of the and socio-economic development of the country, acceleration economic growth rates and improvement of its quality, creating new jobs, increase exports of goods and services with high added value, especially those scientointensive (IT, nano-technology, pharmaco-genetics, biotechnology); increasing the domestic and foreign investments in the economy, intensification of regional development; improvement of the environment and enhancing its protection; improving of management in SNI, implementation of programs and projects of technology transfer in all economic fields and faster integration in the innovative structures worldwide.

References

[1] Hămuraru, M. (2008) – „Moldova's specific involvement in the creation of the new economy", Autoreferat of PhD thesis in economics, Chisinau;

[2] Stoican, M., Camarda, A., Plesa, D. (2011) – „The Human Capital in the Innovation Economics of the Developed Countries, Recent Researches in Energy &

Environment (EE 110“, Cambridge, UK, pg. 117;
[3] Ene, C., Gheorghiu, A. (2011) – „A Theoretical Approach for Dynamic Modelling of Sustainabele Development“, 6th IASME/WSEAS International Conference on ENERGY& ENVIRONMENT (EE'11) Cambridge, UK, Published by WSEAS Press;
[4] Eurostat (2009), OECD Factbook (2010) – „Economic, Environmental and Social Statistics“, ISBN 92-64-08356-1 - © OECD 2010, Science and technology - Research and Development - Expenditure on R & D;
[5] Belostecinic, Gr. (2011) – „Knowledge economy as a source of sustainable economic growth“, Annals of the Academy of Economic Studies of Moldova Ninth Edition;
[6] Innovation Union Scoreboard (2011) – „The Innovation Union's performance scoreboard for Research and Innovation“, February;
[7] Pîşchina, T. (2007) – „Structural priorities in the globalized economy“, PhD Thesis, ESA, Chisinau;
[8] Mândru, L. (2011) – „Quality-Risk Integrated Management for Industrial Commercial Companies“, Transilvania University, Publishing House, Brasov, Romania, ISBN 978-973-598-944-6, pag. 160;
[9] Sorocean, O. (2010) – „Innovative Foundations of national competitiveness“, International Scientific Conference Materials, ASEM. vol.1, Chisinau,
[10] ANCS Report (2010)– „Governmental policies for R & D and Innovation in Romania“, Ministry of Education, Youth and Sports.

RESEARCHES ON THE ASSESSMENT OF AGRO-ECONOMIC POTENTIAL OF ADJACENT LOCALITIES OF CĂLDĂRUŞANI LAKE IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT IN AGRICULTURE

Prof. Ph.D. Cristian Ovidiu SIMION [1], Lecturer Ph.D. Roxana Marilena CIOBANU [1], Lecturer Ph.D. Dana Gabriela CONSTANTINESCU [1], Lecturer Ph.D. Cristina Elena NEDIANU [1], Prof. Ph.D. Adrian BASARABĂ [2]
[1] Bioterra University of Bucharest, No. 81, Gârlei Street, sector 1, 013722, Bucharest, Romania
[2] University of Agronomic Sciences and Veterinary Medicine of Bucharesti, No. 59, Mărăşti Boulevard, District 1, Bucharest, 011464,
Phone: +40 (21) 318 25 64, Fax: +40 (21) 318 28 88,
Web: www.usamv.ro

Abstract: *Research has been achieved in order to establish the current situation of the area around Lake Căldăruşani and to highlight opportunities for sustainable development of agriculture in the area. However, the work can be an instrument of political justification to promote common development agro-economic strategy of adjacent localities of Căldăruşani Lake (Nuci and Grădiştea Communes). Favorable elements to agro-economic activity in the Căldăruşani Lake area are represented by qualitative group of lands after limiting factors of agricultural production, with work requirements and pedo-ameliorative derived from it, and agro-climatic resources and its application in agriculture.*

Key words: *agro-economic, land, quality of the soil, pedo-ameliorative works*

Introduction

The study includes information on the current and future state of agro-economical rural development in the Căldăruşani Lake with special focus on the natural environment for the supporting of the economic agricultural and non agircultural activities in the studied areas (Nuci and Grădiştea Communes)[3].

The Nuci Commune was formed as settlement on the estates of the landowners or monasteries by the acts of donation of the Wallachian rulersa.The commune is made up of 5 villages: Nuci (commune residence), Micsunesti Moara, Micsunestii Mari, Balta Neagra and Merii Petchii.

The ensemble of these villages is locatedin the N-E of llfov County, the settlements in the southern side of the commune becoming developed along with the course of the river Ialomita.

The commune Gradiştea has the name from an old occupation specific for the area and the initial inhabitants whom dealt with greek products trade. Likewise, until 1934 the name of the commune was Greci. Localities presently pertaining: Gradistea and Sitaru.

Land use is presented into five current classifications in Romania and into five main classes in the European Union, CORINE Land Cover, such as: artificial surfaces (9% of the study area), agriculture (60 %), forests and semi-natural land (27%), wetlands (3%) and water bodies (1%) [1][4].

Materials and methods

Based on the soil data and field morphological observations, I elaborate a group of arable land and a range of restrictions. I made a series of assessments on production results.
A rich illustrative material with graphics, as well as analytical data were obtained and developed from administrative territorial units.
The quality grade (N) is obtained by the interpretation of the data related to characteristics of the soils and land (environment) existing in the pedologic studiesbased on the general relation:N = f (soil, climate, relief, hydrology).
Eighteen soil, climate, relief, hydrlogy characteristics (or parameters) intervenein the calculation of the quality grade; a subunit coefficient or equal to 1 at most which represents the relative influence of the respective parameter over the productive potential of the respective plant is attributed.
The result of the 17 coefficients (salinization and alkalinization combining in one coefficient), multiplied by 100, represents the „natural" quality degree.
Calculation method for quality of the soil is done using the formula: Y = (x1 – x2... xn)100; which Y represent quality of the soil mark; x1, x2, xn represent coefficient values of indicators [1]

Results and discussions

The functional typology of the communes studied, respectively Nuci and Grădiştea is predominantly agricultural, however there existing small crafts production units: osier braiding, carpentry assembly, mills, bakeries, in both studied communes.
The way of using the agricultural land and the main productions within the Nuci commune are presented in table 1 and table 2[3]:
From the above data it results that the most important share in the administrative territory of the commune (5.196 ha) is represented by the agricultural surface (4.564-4.618 ha) respectively 87,8%. The main productions within the Gradistea commune are presented in table 3 and table 4 [3]:

Table 1 - Agricultural land use in Nuci commune

Specifications	Surface/ha.		Productions	
	NIS* 2011	Local Council200	NIS*2011 Total/to	Local Council 2009 (Kg/ha)
Total agricultural land,out of which:	4.564	4.618		
Arable	4.414	4.379		
Pasture	131	217,5		
Vineyards and nurseries	19	19,3		
Orchards		2,56		
Surface cultivated with wheat and rye	1.506		4.486	2.470 (onlywheat)
Surface cultivatedwith corn	1.712		7.379	5.100
Surface cultivated with sunflower	513		452	1.050
Surface cultivatedwithvegetables	320		10.715	15.000

Table 2 - The structure of the incorporated area in Nuci commune

Total territory of the commune	5.196 ha (N.I.S.*)	5.197 ha (L.C.**)
Incorporated area	358,93 ha.	
Unincorporated area	4.837 ha.	
Agricultural land	4.564 ha.	4.618 ha.
Forests		266 ha.
Ponds and rivers		78,6 ha.
Unproductive land		20 ha.
Roads		82,3 ha.

*N.I.S. □National Institute of Statistics
**L.C. □Local Council

Tabel 3 - Land use structure in Grădiştea commune in 2011

Category	Surface (ha)
Arable	2682
Pasture	120
Forests	295
Vinyards	75
Water surface area	140
Total surface	3312

Table 4 - Agricultural land use in Grădiştea commune

Crop	Cultivated area in the year 2011 (ha)	Surfaces which could be cultivated (ha)	Quantity of product obtained per ha
Wheat	820	850	3800
Corn	475	496	7000
Sunflower	360	340	1800
Rape	150	140	1900
Barley	80	100	2500
Species of barley	5	7	2000

From these statistics one may observe a net superiority in the agro-economic activities carried out at the level of the Nuci commune in comparison to the Gradistea commune resulted from the net superior agricultural potential of the surfaces held by the first commune, almost double.

A. Land classification by the limiting factors of the agricultural production

The limiting factors of the agricultural production are the results of the elements ofthe natural environment, namely the landscape scales conditions and parental materials, of climate, groundwater, as well as vegetation.

Besides some properties of the soils less favouring of the culture plants development, like the too acid or too alcalinereaction, extreme textures, salinity, reduced reserves ofmold and nutrients, there are also other factors which restrict the use of soils (lands) like the hilly relief associated with the risk of corrosion, the water excess, the reduced edaphic volume, the defficiency of micorelements, etc. for agricultural cultures [5].

Based on the environmental study and the soil cover I tried to elaborate a lands classification according to the limiting factors of the agricultural production from Nuci and Gradistea Communes.

Thus, in the studied area the following categories of lands have been identified [1]:

Class I – very good lands for the field cultures without any restriction. It refers to the plain relief (the proper interfluve Ialomiţa - streamVlăsia) with soil cover made up of chernozemic argic soils and reddish preluvio-soils.

Class II – good lands, with redued limits because of the small content of humus, the moderate acid reaction and compaction. This includes: the reddish preluvio-soils, preluvio-soils and luvo-soils.

Class III – average lands, with moderate limits due to the temporary excess of humidity and erosion. This includes: the luvo-soils, gleio – soils, erodo-soils and aluvio-soils.

Class IV – lands with very severe limitations, not suitable under non development conditions. They can be used as pastures only after drainage works. Here we include the stagno-soils, gleio-soils, rego-soils and aluvio-soils.

Class V – lands with very severe limitations, not suitable under non development conditionseither for the field cultures or for the orchards and vineyards. We include the stagno-soils and rego-soils.

Considering the method of quality of the researched perimeters land, these categories are as follows: Class I – 66 points, Class II – 55 points, Class III – 45 points, Class IV – 25 points, Class V – 15 points.

Requirements, pedo-ameliorative works and the use of land

A series of morphological, phisical and chemical features highlights the fertility level of the researched perimeters land, its agroproductive possibilities while the erosion,acidification, gleying and water drainage determine on its turn a decrease of the agricultural production [6]. The anthropic activity had a special contribution in accentuating the negative effects due to which by an improper agrotechnique of the arable surfaces (mechanical works executed on soils with high humidity, fertilizations with predominantly acid chemical substances, the lack of organic fertilizations), the productive potential of the soils in the researched territory became greatly reduced.

For the elimination of the negative effects of the limiting factors of the agricultural production and by this the amelioration of the productive potential of the sector Câmpia Vlăsiei in which lake Căldăruşani is located, a series of hydro-ameliorative and pedo-ameliorative works are imposed as follows:

- Current fertility, the change of the depth of ploughing and irrigation;
- Radical fertilization, the changing of thedepth of ploughing and calcium castigation;
- Scarifying for the elimination of the excess of humidity and current and radical fertilization;
- Works for the control of soils erosionby ploughing on level curve and the avoidance of hoeing crops;
- Lowering the lever of the ground water and the embankment along the Vlăsiei and Cociovalištea Valleys.

The works for the prevention of soils erosion can be summarized to the rectification of the agrotechnical works (the direction of the ploughing, the direction of seeding).

B. Land classification by Corine Land Cover 2000 of the researched perimeters lands (fig. 1)[4]

ha, being imposed either their elimination or their inclusion in other classes accoridngly.
The lands mainly occupied by agriculturewith important areas of natural vegetation exist on extended spaces in the ensemble of the area studied, more significant being the areas on the right of Vlăsiei, north from Lipia, north from Balta Neagră and in south from Vlăsia, on the right of Cociovalиştei, south from

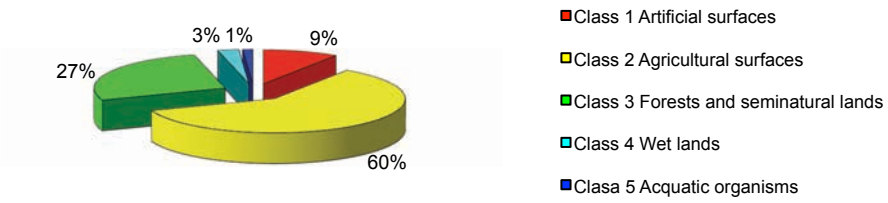

Figure 1 - Land use class share according to Corine Land Cover 2000 classification

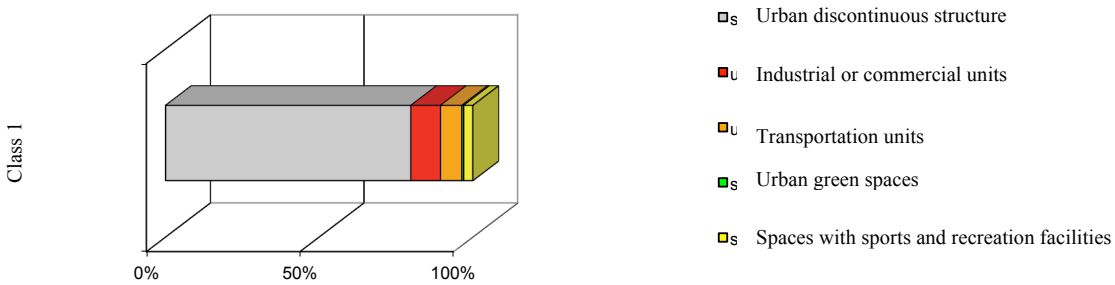

Figure 2 - Land use type share in Class 1 according to Corine Land Cover 2000 classification

The industrial and commercial units are found in more settlements from the basin of the lake with high differentcein the total of the area studied, respectivelyin the Nuci commune the surfaces are smaller than 25 ha, thus being net superiorto those of commune Grădiştea, this commune being advantaged by the geographical position as well (fig. 2).
The non irrigated arable land is present in all localities in the area studied, either around or inside them. The characteristics of the relief have imposed the existence of some large areas with such use, most below 25

Paşcani and so on (fig.3).
The areas of arable non irrigated landwith surfaces exceeding 25 ha are located on quasi horizontal lands or with reduced slopes of 8o-10o (on the bridge of terraces, in which case the geological sub-layer is represented by terrace gravel and sand, in the everglade, on some slopes with gentle slopes) and with fragmentation depth of below 20 m, like for example in the east side of the locality Grădiştea, south-east and east side of commune Moara Vlăsiei.

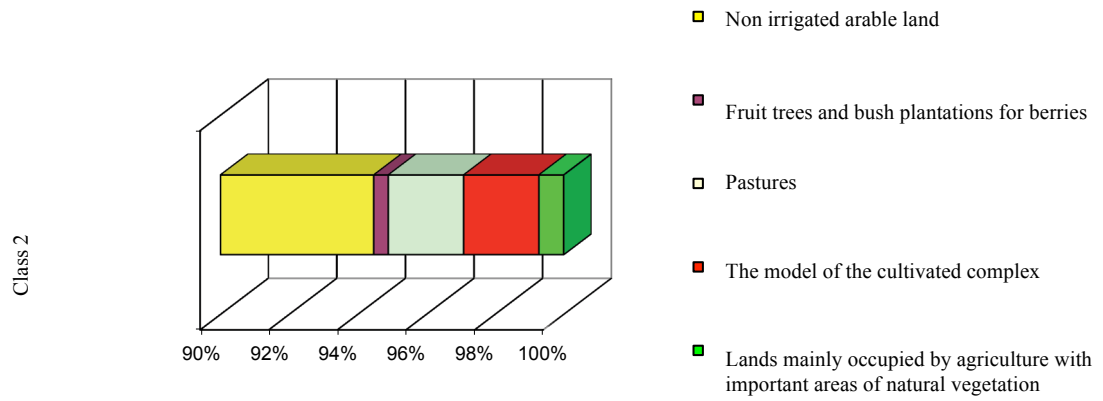

Figure 3 - Land use type share in Class 2 according to Corine Land Cover 2000 classification

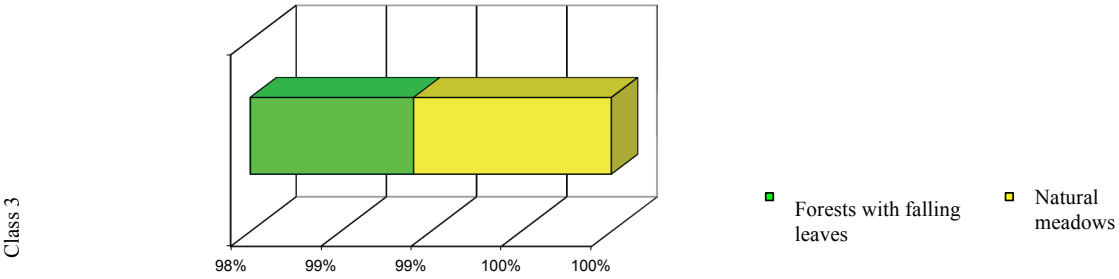

Figure 4 - Land use type share in Class 3 according to Corine Land Cover 2000 classification

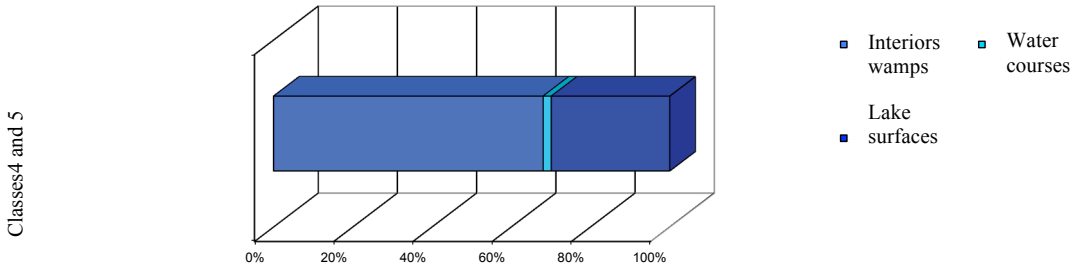

Figure 5 - Land use type share in Classes 4 and 5 according to Corine Land Cover 2000 classification

On their turn, the agro-forrest lands occupy extended spaces, thus being located for example in the interfluve space at Nuci or on the right side of Vlăsiei at Căldăruşani. The relief energy has values between 30 and 50 m, with maximum values on interfluves where even the slopes have values between 8o-9o. The slopes on which this landscape individualized are affected by landslides expecially in the Vlăsiei basin (fig.4).

Regarding the way the lands in classes 4 and 5 are used there is a presentation in fig. 5.

Conclusions

» From the investigation carried out and results of researches at the level of the two localities (Nuci and Grădiştea Communes) and in the adjacent area (Căldăruşani Lake), it results that one of the main natural resources (the arable land), which totalizes 13000 ha is suitable for cultivation for all the plant species of the studied area.

» In the modern economy, the distribution of horizontal industry and not only is made in rural areas, usually located around industrial poles. The location of small and medium industrial enterprises in rural areas means diversifying the economy, employment, increasing economic power of municipalities bordering Căldăruşani Lake and their overall development.

» Land capability of researched perimeters changes under the influence of natural factors, mainly because human intervention, the quality of lands must constantly updated to suit each stage of agriculture development and the economy as a whole.

References

[1] Basarabă A., Andreiasi N. (2014) – „Quality of the soils and agricultural lands“, Alpha MDN Publishing House,Romania;

[2] Basarabă A. (2014) – „Pedology“, Ceres Publishing House, Romania,;

[3] Ciobanu Roxana Marilena (2011) – „Research concerning limnological characteristics of Caldarusani Lake and the assessment of economic potential and tourism for sustainable development of agriculture and adjacent cities“, PhD thesis, USAMV Bucharest, Romania;

[4] Addendum (2000) – „CORINE land cover technical guide“;

[5] Hera C, Schiopu D. (2001) – „Scientific research and sustainable agriculture“, Romania;

[6] I.N.C.P.A. (2003) – „Romanian system of soil taxonomy“, Estfalia Publishing House, Romania.

INTERNATIONAL PARTNERS

REPUBLIC OF MOLDOVA

University of the Academy of Sciences of Moldova

EGIPT

Khadiga Mohamed Gaafar – Higher Institute for Specific Studies
May Mohamed El Batran – Higher Institute for Specific Studies
Mohamed Mahmout El Batran – Higher Institute for Specific Studies

ITALIA

Balestri Gino – D.A.G.A. Sezione Scienze Zootecniche, Università di Pisa
Ceccanti B. – Istituto per lo Studio degli Ecosistemi (ISE), Pisa
Doni S. – Istituto per lo Studio degli Ecosistemi (ISE), Pisa
Fantoni Elena – Comune di San Giuliano Terme Pisa
Fontanelli Marco – University of Pisa
Fratini Roberto – Department of Florence University
Gajo Paolo – Florence University
Ginanni M. – University of Pisa
Lorenzini G. – Dipartimento di Scienze Zootecniche, Università di Firenze
Macci C. – Istituto per lo Studio degli Ecosistemi (ISE), Pisa
Mani Danilo – D.A.G.A. Sezione Scienze Zootecniche, Università di Pisa
Martini Andreea – Dipartimento di Scienze Zootecniche, Università di Firenze
Masciandaro Graziana - ISE-CNR Pisa
Migliorini P. – Università degli Studi di Scienze Gastronomiche
Peruzzi A. – Centro Interdipartimentale di Ricerce Agro-Ambientali "Enrico Avanzi", University of Pisa
Peruzzi E. – Istituto per lo Studio degli Ecosistemi (ISE), Pisa
Pistoia Alessandro – D.A.G.A. Sezione Scienze Zootecniche, Università di Pisa
Poli Piera – D.A.G.A. Sezione Scienze Zootecniche, Università di Pisa
Raffaelli M. – University of Pisa
Siboni Eugenio – Società Produttori Sementi SpA, International Marketing Manager, Argelato (BO)

BRASIL

Guilhermino, M.M. – Universidade Federal do Rio Grande do Norte (UFRN), Natal, RN

„BIOTERRA" University Foundation ROMANIA – BUCHAREST 2011
code NURC : 882 category "C"
ISSN 1454 – 816X
Publication located in the international database: ReportLinker.com