

ECONOMIC STUDIES AND RESEARCH ON ECOLOGICAL AGRICULTURAL PRODUCTION

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Abstract

If the scientific research concerning the ecologic culture systems for different plant species last from the 1930's, we cannot state the same thing for the economic research. The biggest weight is occupied by the technologic studies and papers, the economic aspects being treated tangentially only and without an obvious end, these ones often being reasons for the different opinions concerning the increase of the ecologic agricultural production. The specialty literature comprises a series of scientific papers which present the results obtained after the economic research carried on in the ecologic agriculture sector.

The first signs of identification of the productive and trade activity last from 1980, when the ecologic agriculture is recognized both by the market and by the governments, national and international organizations.

Internationally, the promoters of the ecologic agriculture are the members and the collaborators of IFOAM Organization (International Federation of Organic Agriculture Movements).

In Romania, the research in the field of the agricultural production economy has been and continues to be carried out within the National Institute of Economic Research, The Agrarian Economy Institute, the Romanian Academy of Bucharest and within the Rural Economy Union, "Gh. Zane" Economic and Social Research Institute, the Romanian Academy, subsidiary of Iasi and "Terra Nostra" Academic Foundation for Rural progress of Iasi.

This paper highlights the scientific contribution of the foreign and Romanian researchers in the field of the ecologic agricultural production economy, being highlighted the main published scientific research.

Key words: ecological agriculture, scientific research, the economy of the ecologic agricultural systems

In specialist literature, ecological agriculture is often confused with biological agriculture and organic agriculture, respectively. This is due to the fact that the terms are used with the same meaning (UK, US – organic agriculture; Greece, France, Italy, the Netherlands and Portugal – biological agriculture; Denmark, Spain and Germany – ecological agriculture).

The actual meaning of organic agriculture has given rise to a series of confusions. The word "organic" means "from plants or of animal origin", yet it also refers to the organisational side of an organism. For this reason, the concept of "organic agriculture" is not particularly precise. Some view it as the type of agriculture based on the use of organic fertilisers and other organic inputs, such as minerals and plant-based pesticides. From this perspective, the focus is on phasing out synthetic or chemical fertilisers and pesticides.

Others consider that the concept refers to agricultural systems which comply with the principles and underlying logic of a living organism, in which all the elements (the soil, plants, farm animals, insects, the farmer, etc.) are

closely interconnected. Organic agriculture therefore should rely on the thorough understanding and skilful management of such interactions and processes.

Organic agriculture is often defined from the perspective of organic standards, which account for its principles and define which methods and inputs are prohibited.

The most comprehensive definition of the term has been proposed by the Wageningen University of Agriculture in the Netherlands, which considers ecological agriculture to be an agricultural science that deals with the systematic research of the material and functional structures of agricultural systems and with the design of agro-ecosystem capable to meet the long-term human needs of food, clothing and housing, relying on its own material, energy and information resources, without harming the environment (Dobay, Krisztina-Melinda, 2005).

More briefly, ecological agriculture is viewed as the science or art of managing or controlling animals and their life environment, to ensure the long-term interest of nature and mankind (Tonca, I., 2002).

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While scientific research into the ecological farming systems for various plant species dates back to the 1930s, economic explorations in this field have been a more recent development. The largest share in the body of research is represented by studies and research on technology, while aspects of economics have been dealt with only incidentally and without a defined purpose, mostly in order to support various claims regarding the increased production levels of ecological agriculture.

MATERIAL AND METHOD

Specialist literature includes a range of scientific papers which present the outcomes of economic research in the field of ecological agriculture. To conduct this study, we have referred to materials published abroad and in Romania, on the topic of ecological agriculture, providing a summary of studies containing economic information regarding the field under review.

RESULTS AND DISCUSSIONS

International studies and research

The first indications of the recognition of the production and trading activity date back to 1980, when ecological agriculture was already recognised by the market and by governments and national and international bodies.

In 1994, the renowned researchers N. H. Lampkin and S. Padel published the work „The economy of organic farming: an international perspective”. Relying on studies conducted in the UK, US, Canada, Australia, Germany, Denmark and Switzerland, the book provides the first comprehensive international analyses of the economic side of ecological agriculture.

Proponents of economic research on ecological agriculture have included the members and collaborators of IFOAM (International Federation of Organic Agriculture Movements), established in 1972. IFOAM brings together and represents ecological agriculture movements from around the world. The Federation is composed of around 700 member organisations from more than 100 countries.

The Federation's main aim is to organise the international ecological agriculture movement. IFOAM is a democratic federation, with key decision made by the general assembly. Members are organised based on the geographical area and the interests of their respective sector. The federation's activity is also carried out within various committees and task forces, depending on

their role (e.g. the committee in charge of IFOAM standards).

One of the main purposes of IFOAM is to provide information about ecological agriculture and to promote its implementation around the globe.

IFOAM seeks to create a common agenda for all the stakeholders in the ecological agriculture sector.

In the area of the development of market guarantees for organic claims, IFOAM develops, maintains and regularly revises the IFOAM Basic Standards which represent the minimum standards at national and regional level. It also establishes the IFOAM accreditation criteria for certification programmes, which are applied by IOAS (International Organic Accreditation Services) which carries out the accreditation of certification programmes.

IFOAM provides several platforms for information exchange such as the Organic World Congress and other international congresses, global and regional events. The magazine “Ecology and Framing” and other publications are major sources of data and tools to support the building of new networks. The international lobbying activities of IFOAM aim to build the image of ecological agriculture and its influencing power.

In 1973, ecological farmers and a group of scientists in Switzerland founded the Research Institute of Organic Agriculture (FiBL).

FiBL has competencies in organic soil management, plant production, animal ethology and organic animal breeding, in socioeconomics, in comprehensive analysis of the organic market and in organic food processing and production.

In addition to practical research, FiBL gives high priority to transferring knowledge into agricultural practice, through advisory work, training courses and expert reports as well as through various modern methods of documentation (magazines, data sheets, reference books and internet).

The majority of economic studies focusing on ecological agriculture worldwide have been carried out by researchers affiliated with the two main organisations, FiBL and IFOAM.

Since 2000, FiBL and IFOAM have implemented a joint research project, publishing the yearbook “The World Organic Agriculture”. Besides the statistics collected within the framework of the global organic survey, it also documents the latest developments and trends in global ecological farming.

In addition the yearbook “The World Organic Agriculture”, the list of other major

publications in the field of the economics of ecological produce includes:

- Supermarket Study 2002. Organic Products in European Supermarkets by Toralf Richter, Gabriele Hempfling, Order no. 1285, FiBL-Studie, 2003;
- The European Consumer and Organic Food by Raffaele Zanolli (editor), Order no. 1362, OMIaRD Publication, Volume 4, 2004;
- The European Market for Organic Food: Revised and Updated Analysis by Ulrich Hamm, Friederike Groenefeld, Order no. 1349, OMIaRD Publication, Volume 5, 2004;
- Development of a European Information System for Organic Markets - Improving the Scope and Quality of Statistical Data by Guido Recke, Helga Willer, Nicolas Lampkin and Alison Vaughan (Editors), Order no. 1339, FiBL-Report, 2004;
- A Guide to Successful Organic Marketing Initiatives by FiBL (Hrsg.) Otto Schmid, Ulrich Hamm, Toralf Richter, Andrea Dahlke, Order no. 1338, OMIaRD Publication, Volume 6, 2004;
- Organic Marketing Initiatives and Rural Development by Otto Schmid, Jörn Sanders, Peter Midmore, Order no. 1363, OMIaRD Publication, Volume 7, 2004;
- Organic Marketing Initiatives in Europe by Bertil Sylvander, Niels Heine Kristensen, Order no. 1364, OMIaRD Publication, Volume 2, 2004;
- Organic Producer Initiatives and Rural Development - four European Case Studies by Peter Midmore, Carolyn Foster, Markus Schermer, Order no. 1348, OMIaRD Publication, Volume 3, 2004;
- World markets for organic fruit and vegetables, International Trade Centre UNCTAD/WTO, 2004.
- Economic Impact of Agricultural Liberalisation Policies on Organic Farming in Switzerland by Jörn Sanders, Order no. 1494, 2007;
- Organic Action Plans. Development, implementation and evaluation by Otto Schmid, Christopher Stopes, Nicolas Lampkin, Victor González, Order no. 1507, 2008;

The prominent researchers Helga Miller and Minou Yussefi, in their work „The World of Organic Agriculture. Statistics and Emerging Trends”, published in 2005, provide a detailed analysis of the state of ecological/organic agriculture at global level. The information in the study has been cited by the majority of scientific papers subsequently published, as they represent a solid scientific base for examining the phenomenon of organic/ecological agriculture.

In the year 2004, the International Trade Centre UNCTAD/WTO published „World markets for organic fruit and vegetables” which represents an in-depth analysis of the organic fruit and vegetables market in the world’s main economies (Austria, Belgium, Denmark, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, UK, USA).

Studies and research in Romania

The establishment of the specific legislative and institutional framework, harmonized to a large extent based on European Union regulations, is a highly beneficial fact as regards the promotion of ecological vegetable farming.

At the same time, various studies have highlighted that Romania, based on its natural, social, human and professional resources, provides favourable conditions for the development of ecological agriculture and vegetable farming.

The pedological, climatic and environmental conditions in Romania create conditions of high biodiversity in agriculture, with definite prospects for the development of ecological agriculture and the production of niche ecological products (Sima, Elena, 2004).

Research in the field of the economy of ecological agriculture production have been carried out by the National Institute for Economic Research (INCE), the Institute of Agricultural Economics (IEA), the Romanian Academy of Bucharest and the Rural Economics Group, “Gh. Zane” Institute of Economic and Social Research within the Iasi branch of the Romanian Academy, and by the Academic foundation for rural progress “Terra Nostra”, Iași.

The available data on the economy of organic system indicates that the shift to such a system does not necessarily entail financial disaster. Although it is possible that production will be lower (by 10% to 25%), variable costs may also decline, yet the premium prices that can be charged will financially compensate the producers (Gruia, R., 1998).

In the paper „Managementul eco-fermelor – Bazele conceptuale și metodologice” (Eco-farm management – Conceptual and methodological foundations), published in 1998, Gruia R. presents various economic advantages of ecological agriculture, in particular:

- the prices of ecological food products are on average 20-30% higher than the prices of similar conventional products, thanks to their higher quality;
- expenses for fertilisers and disease and pest control and their treatment and application are reduced by ca. 40-50%,

while the production is more stable due to the decreased dependence on inputs Gruia, R., 1998.

The journal *Economie Agrară și Dezvoltare Rurală* (Agricultural Economics and Rural Development) published by the National Institute for Economic Research (INCE) and the Institute of Agricultural Economics (IEA), part of the Romanian Academy in Bucharest, has included a series of noteworthy research articles in the field of ecological food products, among them:

- *Agricultura organică – trecut, prezent și viitor* (Organic Agriculture – past, present and future), by Mihai Chițea, article published in *Economie Agrară și Dezvoltare Rurală*, year 1, issue no. 1-2, Editura „Terra Nostra”, Iași, 2004;

- *Piața produselor agroalimentare ecologice* (The market for ecological food products), by Elena Sima, article in *Economie Agrară și Dezvoltare Rurală*, year 1, issue no. 3-4, Editura „Terra Nostra”, Iași, 2004;

- *Tendințe și oportunități pe piața produselor agroalimentare ecologice* (Trends and opportunities on the market for ecological food products), by Elena Sima, article in *Economie Agrară și Dezvoltare Rurală*, year 2, issue no. 6, Editura „Terra Nostra”, Iași, 2005;

- *Agricultura ecologică – percepții și perspective* (Ecological agriculture – perceptions and perspectives), by Brumă Ioan Sebastian, article published in *Economie Agrară și Dezvoltare Rurală*, year 2, issue no. 7, Editura „Terra Nostra”, Iași, 2005;

- *Evoluția suprafețelor și producțiilor ecologice certificate în România* (The development of certified ecological land and production), by Brumă Ioan Sebastian, article published in *Economie Agrară și Dezvoltare Rurală*, year 2, no. 7, Editura „Terra Nostra”, Iași, 2005;

- *Percepția consumatorilor privind produsele agricole ecologice* (Consumers' perception of ecological agricultural products), by Krizstina Melinda Dobay, in *Economie Agrară și Dezvoltare Rurală*, year 2, issue no. 7, Editura „Terra Nostra”, Iași, 2005;

- *Produsele ecologice – oportunități și avantaje pentru sectorul agricol românesc* (Ecological products – opportunities and benefits for the Romanian agriculture sector), by Elena Sima, article in *Economie Agrară și Dezvoltare Rurală*, year 2, issue no. 8, Editura „Terra Nostra”, Iași, 2005;

- *Modele de agricultură ecologică în context European* (Models of ecological agriculture in the European context), by Mirela Rusali, article in *Economie Agrară și Dezvoltare*

Rurală, year 5, issue no. 1, Editura Academiei Române, 2009;

- *Produsele agroalimentare ecologice* (Ecological food products), by Elena Sima, in *Economie Agrară și Dezvoltare Rurală*, year 5, issue no. 2, Editura Academiei Române, 2009

In the paper *Piața produselor agroalimentare ecologice* (The market for ecological food products), Elena Sima presents a series of economic data on the ecological agriculture in Europe and Romania, also quoting the former French minister of agriculture, P. Vasseur, who, in 1996, argued that ecological agriculture is “an economically viable, environmentally sound and socially just agriculture, which aims to meet human needs without destroying natural resources. Economically viable means that it must cover the market demand and guarantee a decent standard of living to producers.” [5]

The researchers members of the Rural Economics Group, of the “Gh. Zane” Institute of Economic and Social Research, part of the Iasi Branch of the Romanian Academy, have regularly published scientific articles in the field of ecological agriculture in the journal series “Studii și Cercetări de Economie Rurală” [Studies and Research in Rural Economics], some of which are listed below:

- *Probleme actuale ale reglementării producerii și comercializării produselor agricole ecologice* (Current issues in the regulation of the production and trade of ecological agricultural products) by Matei Daniela, in “Studii și Cercetări de Economie Rurală”, tome I, Editura „Terra Nostra”, Iași, 2003;

- *Îmbunătățirea marketingului produselor ecologice*, autor Dogaru Vasile, article in „Studii și Cercetări de Economie Rurală”, Tome II, Editura „Terra Nostra”, Iași, 2004;

- *Marketingul produselor agricole ecologice, preocupare nouă a agricultorilor români*, autor Dobay Krisztina Melinda, article in Studii și cercetări de economie rurală, Tome III, Editura „Terra Nostra”, Iași, 2005;

- *Sisteme agricole prietenoase față de mediu*, autor Brumă Ioan Sebastian, article in „Studii și Cercetări de Economie Rurală”, Tome IV – Spațiul Rural. Abordări Multiple., Editura Terra Nostra, Iași, 2006;

- *Principii și norme pentru proiectarea modelelor de conversie a fermelor legumicole la sistemul de exploatare ecologic și pentru elaborarea unui ghid de bune practici*, autor Bohateret Valentin Mihai, article in Studii și cercetări de economie rurală, Tome VII, Editura Terra Nostra, Iași, 2008;

- *Cadrul legislativ privind agricultura ecologică și siguranța alimentară în România*, autor Matei Daniela, article in „Studii și Cercetări de Economie Rurală”, Tome VII, Editura „Terra Nostra”, Iași, 2008;

- *Posibilități de dezvoltare a legumiculturii ecologice în județul Vaslui*, autor Brumă Ioan Sebastian, article in „Studii și Cercetări de Economie Rurală”, Tome VII, Editura „Terra Nostra”, Iași, 2008;

- *Evoluții pe piața românească de produse ecologice*, autor Matei Daniela, article in „Studii și Cercetări de Economie Rurală”, Tome VII, Editura „Terra Nostra”, Iași, 2008.

The prominent academician Ioan Paun Otiman published in 2007 the study *Agricultura organică: principii, cerințe, standarde* [Organic agriculture: principles, requirements, standards] which provides an overview of the market for ecological agricultural products and of distribution channels.

In recent years, the Ministry of Agriculture, Forestry and Rural Development, the World Bank and the Ministry of Education and Research, under the Program „Cercetare de excelență” [High Quality Research], have launched a number of research projects in the field of ecological agriculture.

In the North East Development Region of Romania, the University of Agricultural Sciences and Veterinary Medicine „Ion Ionescu de la Brad”, Iași, SCADL Bacău, ICB Iași, ICES „Gh. Zane”, the Iasi Branch of the Romanian Academy, and Fundația Academică pentru Progres Rural „Terra Nostra” of Iași [“Terra Nostra” Academic Foundation for Rural Progress] have implemented a range of research projects focusing on ecological agriculture.

During the period 2002 – 2005, “Terra Nostra” Academic Foundation for Rural Progress implemented the project “*Promotion of organic agriculture in the North East Development Region of Romania*”, funded by the Ministry of Agriculture, Forestry and Rural Development.

The main purpose of the project was to disseminate the data and results from scientific research and from the practical experience of agricultural producers, in the field of ecological agriculture, in order to promote ecological agriculture in the North East Development Region of Romania.

The main outcomes of the project consisted in:

- setting up a reference and information dissemination office in the field of organic agriculture, which created a database of organic agriculture;

- editing two guideline papers and six issues of the magazine „Agricultura ecologică – pași spre viitor”;
- distributing information materials on organic agriculture to specialists and farmers in the counties of Iași, Bacau and Neamt;
- delivering several training sessions for agricultural producers and public consultants;
- establishing 3 demonstration plots and monitoring the shift towards organic agriculture in the target exploitations;
- organising visits to the demonstration plots for interested farmers based in the counties targeted by the project;
- facilitating the specialised training in organic agriculture of consultants with the Iasi office and of the 3 County Chambers of Agriculture of Iasi, Bacau and Neamt.

In 2006-2008, a consortium consisting of the „Ion Ionescu de la Brad” University of Agricultural Sciences and Veterinary Medicine (U.Ș.A.M.V.) Iași, the Vegetable Farming Research and Development Centre of Bacau, the Iasi branch of the National Institute for Research and Development in Biological Sciences and the Iasi branch of the Romanian Academy - (ICES) „Gh. Zane” Institute of Economic and Social Research, implemented the project “*Evaluating the current situation and the development potential of ecological vegetable production in the North East region of Romania*” a research project funded under the program CEEX – AGRAL MODUL I: „RESEARCH PROJECTS – DEVELOPMENT OF RESEARCH COMPLEXES”.

The purpose of the project was to assess the current development level of ecological vegetable production and to evaluate the prospects for local vegetable farms to make the transition to the ecological production system.

The general objectives of the project were:

- to assess the natural, economic and social resources for achieving the transition to the ecological vegetable production;
- to survey consumers’ and producers’ attitudes and preferences pertaining to organic vegetable farming;
- to study the main risk factors affecting ecological vegetable farming;
- to conduct a case study research regarding the process of conversion to ecological vegetable farming;
- to develop the theoretical groundwork and design the models for the transition

(conversion) to ecological vegetable production.

The following outcomes were achieved as a result of the implementation of the project:

- carrying out an objective evaluation of the current situation of vegetable production in the north east area of Romania and determining the potential for farms to make the transition to ecological farming;
- assessing the natural (pedo-climatic resources and biological hazards), economic and social resources;
- surveying the attitude and preferences of consumers and producers pertaining to ecological vegetable production;
- studying the main risk factors (abiotic, biotic, economic and social) in ecological production;
- conducting case studies regarding vegetable production with positive prospects for making the transition to the ecological farming system;
- establishing the theoretical groundwork and designing the models for the conversion to ecological vegetable production.

The outcomes demonstrate that the agricultural area in focus (situated in the North East region of Romania) has a remarkable potential for expanding vegetable farming based on the total farmed area (ca. 46 thousand ha), tradition and past production levels.

The existence of vegetable farming basins or micro-areas demonstrates the potential for developing ecological vegetable farming in about 23 localities situated in all the six counties in the region.

Three publications (books) were also developed, to further the opportunities for professional training in ecological vegetable farming: *Cultivarea legumelor cu metode ecologice* (Vegetable farming using ecological methods), *Bazele tehnice ale legumiculturii ecologice* (Technical foundations of ecological farming), *Ghid de bune practice* (Best practices guidelines).

CONCLUSIONS

Analysing the specialist literature, one may note that the largest share in the body of research is represented by studies and research on technology, while aspects of economics have been dealt with only incidentally and without a defined purpose, mostly in order to support various claims regarding the increased production levels of ecological agriculture.

Economic research will play a key role in the development this sector of agriculture, which many view as the salvation of Romania.

Scientific studies and research regarding the economics of ecological agricultural production must be oriented towards identifying the agricultural areas and farms which implement ecological technologies; researching production, distribution and profit of such farms; studying the market for ecological products and assessing the prospects for its expansion; testing the market for products obtained using non-polluting technologies and determining the outlook in relation to changes in key influencing factors; surveying the attitude and preferences of consumers and producers of ecological food products.

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