

Cofas, Elena; Vlad, Cristina Mihaela; Berevoianu, Rozi Liliana

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## ORGANIC FARMING IN THE CONTEXT OF THE BIOECONOMY

COFAS ELENA<sup>1</sup>, VLAD MIHAELA CRISTINA<sup>2</sup>, BEREVOIANU ROZI LILIANA<sup>3</sup>

**Abstract:** *The concept of "bioeconomy" or "green economy" is currently highly debated because it is considered to be essential for the future of the world economy. This concept seeks to find both practical solutions applicable in international affairs development environment and long-term alternatives in order to improve the quality of life and eliminate possible impoverishment of the population, due to problems of crisis you no longer are multiple solution. To have a sustainable economic development requires a joint effort between the public and private sectors, in order to separate economic growth from excessive use of resources, the main objective quality of life along with reducing the environmental and social deficit. The transition to bio-based economy implies the practice of investment policies and the connection between economic development, biodiversity, ecosystems, climate change, health and welfare in the medium and long term. These premises must be connected together to achieve sustainable development - considered the resumption of economic growth globally.*

**Keywords:** *bioeconomy, environment, agriculture, ecology, sustainable*

### INTRODUCTION

Bioeconomy is a concept that initially was discussed in specialized environments with reference to environmental management, but increasingly through sustainable development in international affairs and political discourses on environment and development. This new concern has been fueled by disillusionment caused by the malfunctioning of markets, the recent crises, particularly economic and financial crisis of 2008. But at the same time, the international community is concerned about looking for a new way forward and economic development that material wealth this not necessarily ensured by increasing environmental risks by widening social disparities and resource depletion (3). The transition to a "green economy" implies a proper concern based on knowledge, research and innovation to create a favorable framework meant to promote long-term sustainable development.

### MATERIAL AND METHODS

Bioeconomy - as independent science - science can be considered a border at the confluence of economy and ecology. One of the views of the bioeconomy is that the life of humanity can be analyzed as follows:

I. the sum of the elements of the natural environment with which one may contact the mere fact of living through knowledge or through direct action or

II. the sum of the elements that make up the social, regarded as a structure of relationships established between people in the complex process of social integration.

Current environmental problems due to the fact that the man involved - its relationship with the natural environment - laws governing economic relations between people, which put him in great contradiction with the environment. Although all laws are important bio-economy through the contribution they bring quality of life, the fundamental law of the bioeconomy is to provide a high quality living environment of mankind.

In the living environment representation lies a natural component that contains material elements of extreme importance to human existence and an artificial component, which favor - at the expense of the natural environment - was the source of imbalances recorded today scale planetary ecosphere (2).

<sup>1</sup>Lecturer doctor Cofas Elena, Faculty of Management, Economical Engineering in Agriculture and Rural Development, Bucharest, Romania, phone/fax: 00 40 744 6474 10, cofasela@yahoo.com

<sup>2</sup> Scientific Researcher III, Phd. Ec. Vlad Mihaela Cristina, I.C.E.A.D.R.-A.S.A.S., e-mail:cristina.vlad@iceadr.ro

<sup>3</sup> Scientific Researcher II, Dr. Berevoianu Rozi Liliana, I.C.E.A.D.R.-A.S.A.S., e-mail:berevoianu.rozi@iceadr.ro

By breaking down the elements of the living environment of people, they may be associated in three groups:

A. *Natural environment* (MN), which includes:

1. richness and biodiversity of the natural environment (BMN)
2. aesthetic satisfaction and comfort offered by the natural environment (CMN)
3. scientific developments arising from the natural environment (SMN).

B. *Manmade environment*(MA), which includes:

1. wealth of useful artifacts created by humans (BMA)
2. aesthetic satisfaction and comfort offered by the manmade (CMA)
3. scientific developments related to the Manmade (SMA)

C. *Social environment* (MS), which includes:

1. rich social ties that integrates human being (BMS)
2. degree of comfort and safety offered by the social environment (CMS)
3. scientific developments related to social environment (SMS)

By adding elements outlined above three relationships that define human living environment:

$$MN = BMN + CMN + SMN$$

$$MA = BMA + CMA + SMA$$

$$MS = BMS + CMS + SMS$$

## RESULTS AND DISCUSSIONS

In recent years, the idea of "bioeconomy" has been widely discussed by specialists not only green, but came increasingly sustainable development in international affairs and political discourses on Environment and Development. Adopting a common vision aimed at decoupling economic growth from the use of natural resources by limiting the extraction of natural raw materials, by reintroducing economic systems after consumption of materials through sustainable management of waste and chemicals, ensuring distribution systems and transport which have the effect of limiting emissions of pollutants and impacts on the environment and human health, all complementary or together to help improve people's health and respecting the carrying capacity of natural ecosystems, with the central objective of poverty eradication and improving quality of life.

The transition to a green economy has strong economic and social justifications. Green economy as defined by the United Nations Environment Programme report (released in February 2011) has resulted in improved well-being and social equity, while significantly reducing environmental risks and ecological scarcity (1). The transition to a green economy means policies and investments that will decouple economic growth from increased consumption of raw materials and energy intensive. A green economy can be thought of as a low-carbon economy through the efficient and sustainable use of resources and ensuring social inclusion. In a green economy, rising incomes and employment should be driven by public and private investments that reduce carbon emissions and pollution, enhance energy efficiency and resource efficiency, prevent loss of biodiversity and ecosystem services etc. Regarding the European dimension, it is known that the European Union is the promoter of global policies on transition to sustainable consumption and production, implementation of resource efficiency in order to reduce and stop the pressure on natural ecosystems. Both strategic documents - the "Danube Strategy" and the "Europe 2020 Strategy" enroll in meeting these objectives.

Through a series of factors such as infrastructure improvements through increased connectivity, environmental, socio-economic development and prosperity, improving governance at the institutional level, the "Danube Strategy" aims both exploitation of existing resources and develop new technologies and capabilities innovation in the Danube macro-region. In the "Europe 2020" initiative

included more efficient use of natural resources, important in the context of climate change and energy diversification. The strategy aims, inter alia, a number of objectives related to the concept of sustainable development, aiming trinomial "20x20x20" (reduction of greenhouse gas emissions by 20 %, raising energy efficiency by 20 % and reduced energy consumption by 20% increasing the share of renewable energy in gross final energy consumption to 20%) by 2020. Industrial agriculture system, the shortcomings accompanying tends to be replaced by "organic" ("sustainable agriculture"). It started to take a shape more clearly since the last decade in our country. Agriculture was from its inception "green", but in recent years is seeking a gricultural application and systematic vision of modern technologies.

Organic farming promotes farming through those means which provides a balance between agroecosystems and a mbiance and is based on the use of those means and methods offered by the company, the scientific and technical achievements that ensures high yields, consistency and quality in terms of protection environment. The farms using inputs varied, in order to achieve profitable agricultural production. For the same purpose it is necessary to apply the appropriate technical, organizational and economic. All the elements ( factors, products, technology components, components of agricultural policies etc.) act interdependent and can be assembled into a unitary so that inputs are allocated and optimally combined and products obtained in terms of economic efficiency convenient (4).

The components of a farming system is chosen and works closely with the costs and the effects it generates, aiming to ensure a positive impact on the effectiveness of each production system practiced. This system is based on the substantial investment and production cost found in the hectare (large amounts are allocated for the use of chemical for application to and control of diseases and pests etc.) and opposed, to a certain extent, in practice, system that use *organic farming*.

The main objectives to be met by sustainable agriculture are (5):

- food security (human needs for food and fiber);
- conservation of environment and natural resources on which agriculture depends;
- more efficient use of renewable resources and neregrenarabile;
- support the viability of farming and quality of life of farmers and members of society;

It is vital that the transition to sustainable agriculture to consider the need to maintain a competitive agricultural sector and economically efficient, responsive to fluctuating consumer preferences and to facilitate the development of trade in agricultural products, preserving at the same time, natural environment and resource base in the future.

According to the specialists of the European Union and experience in this area of the countries that joined before our country needs 10-15 years to the organization and practice extensive farming system, about 25 % of agricultural land, especially for training of farmers and farm equipment with appropriate material and technical base and for structuring and development of the internal market for food and agriculture, Romania's competitiveness in the EU market and important prerequisites for the development of high efficiency agriculture and strengthening the activity socioeconomic rural sector.

Organic farming is a dynamic sector in Romania, which has seen an upward trend in recent years, both in the vegetable and animal production sector. In 2011, Romania ranked 10 in Europe, with an area of 229 946 ha cultivated in organic farming system. According to data from the Ministry of Agriculture and Rural Development, the number of registered organic operators is increasing. The maximum was reached in 2012, namely 26.736 operators; compartment with 2010 the number of operators increased by 11,80 % . Of the 26.736 registered operators in 2012, 26.390 are farmers, processors 103 and the remaining traders. Figure 1 shows the dynamics of nationally registered organic operators for the period 2006-2012.

Most of these operators meet record in Suceava, their number being 4.358. Suceava is followed, in order, Caras Severin (3.754 operators), Nasaud (3.088), Alba (2.990), Iasi (1.929), Cluj (1.440), Hunedoara (1.162) and Maramures (1.010). Moreover, Suceava occupied this place every year

in the period 2007-2012, the number of operators increased by 1.693 new sign. In the same period, the amount recorded in the areas of organic farming increased from 13.844 ha to 30.817 ha, 16.973 ha respectively. Of the 30.817 ha of arable land, estimated at the end of 2012, 675 ha are occupied by arable land and 30.142 ha with pastures and meadows. The arable land in the system ecological occupy 8.8% of the agricultural area of the county, while the system comprises 18% of the total area of pastures and meadows.

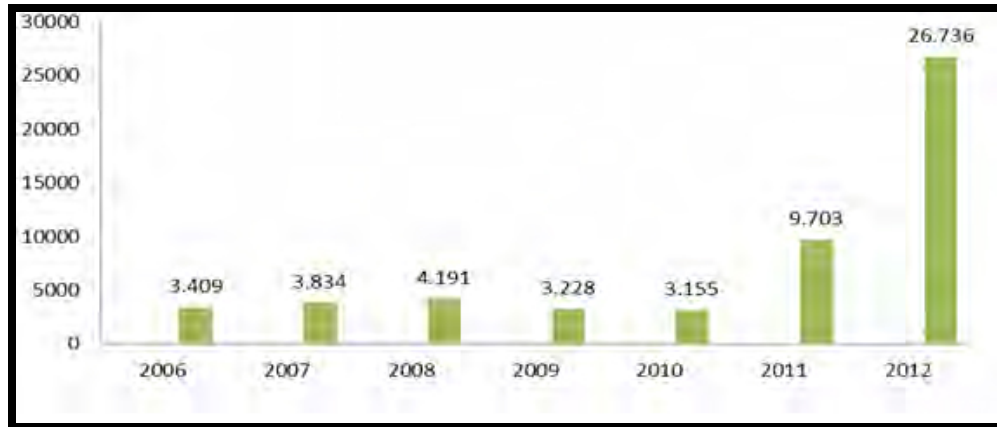


Fig. 1 Number of registered organic operators (Romania) (Source:MARD)

Regarding the share of certified organic crops in 2011, the first position is occupied by cereal grains and permanent grassland (by 34%), second place is situated industrial crops (21%), while other cultures have negligible weight, as shown in figure 2.

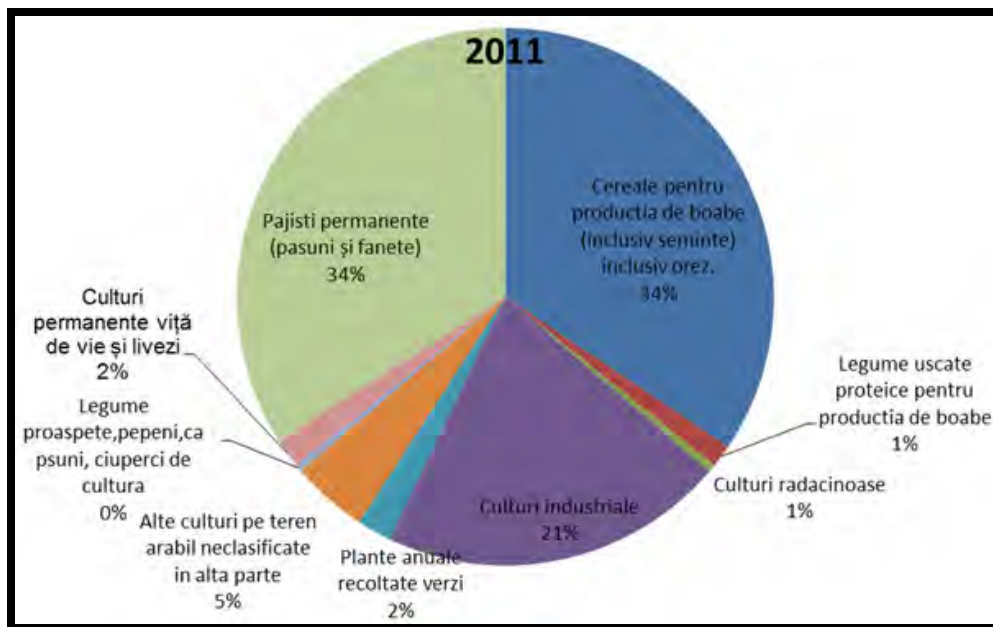


Fig.2. The share of certified organic crops, in 2011 (Source:MARD)

1. **Vegetable sector:** making a comparison between the average yield of main crops in both organic and conventional system can draw the following conclusions:

- the average crops in organic is smaller than that in the conventional system (as shown in the embodiment of figure 3 and figure 4);

- for example, white cabbage production culture medium in organic in 2011 was 15.264,9 kg/ha while in the conventional system there has been a production of 21.807 kg/ha;
- even if the average yield in organic is smaller than that in a conventional manner, the first receiving higher price advantage in the exploitation of the production.

Situation analysis for the specific applications submitted for 2012 shows that small operators in the sector of organic farming - crop production, with holdings from 0.3 t o 5 ha is about 65 %. To meet the demands of supporting farm operators as associations small vegetable sector, required to maintain the system to cover the fee for inspection and certification, and continuing production, the government has proposed that the specific support to be more balanced in favor of small farm operators.

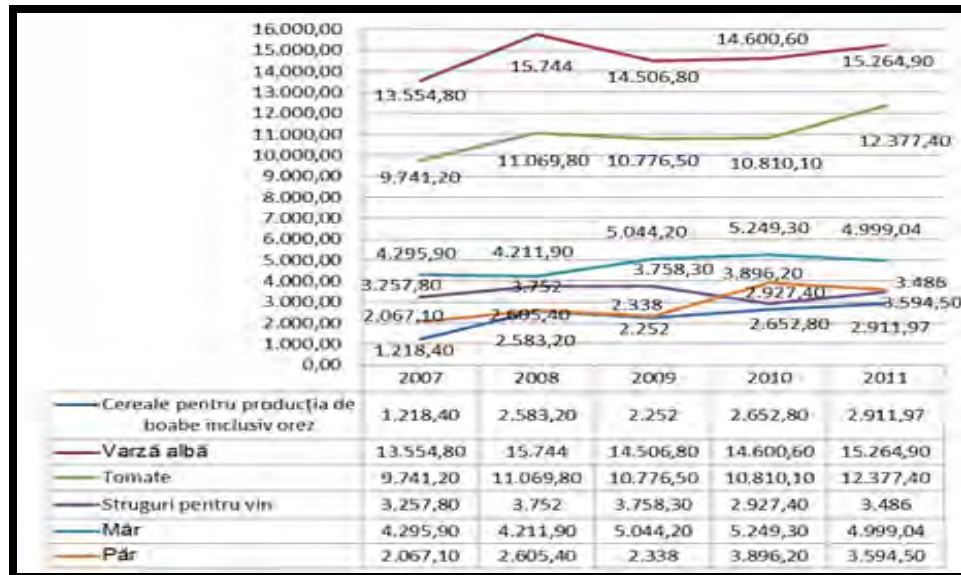


Fig.3. Average yields (kg/ha) certified in 2007-2011 (Source:MARD)

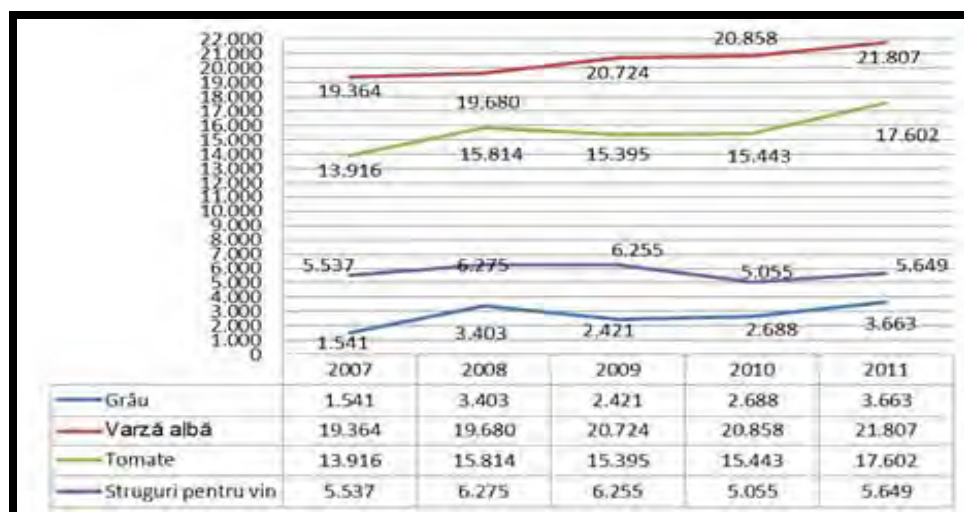


Fig.4. Conventional average yields(kg/ha)in 2007-2011(Source:MARD)

2. **The livestock sector:** as shown in figure 5, the sector has been a growing trend of livestock organically grown in large part due to the support measures coming from the state, by HG no. 759 of 21 July 2010 and the National Rural Development Programme 2007-2013 (7). However, interest in organic production of livestock is much smaller compared to the number of operators in the plant.



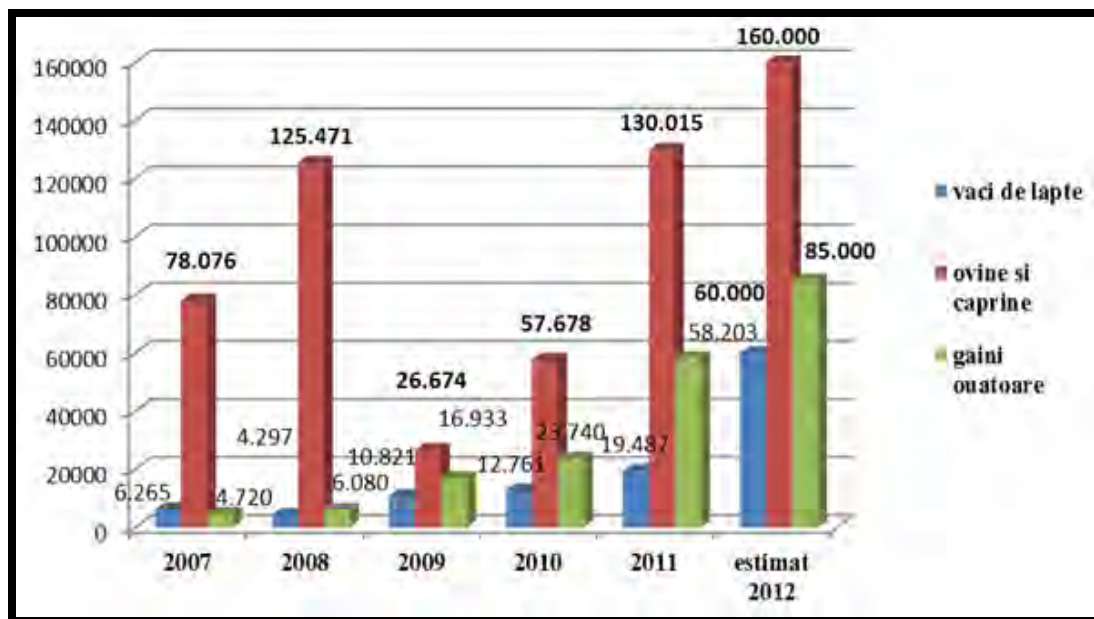


Fig. 5. Livestock(heads)in 2007-2011(Source:MARD)

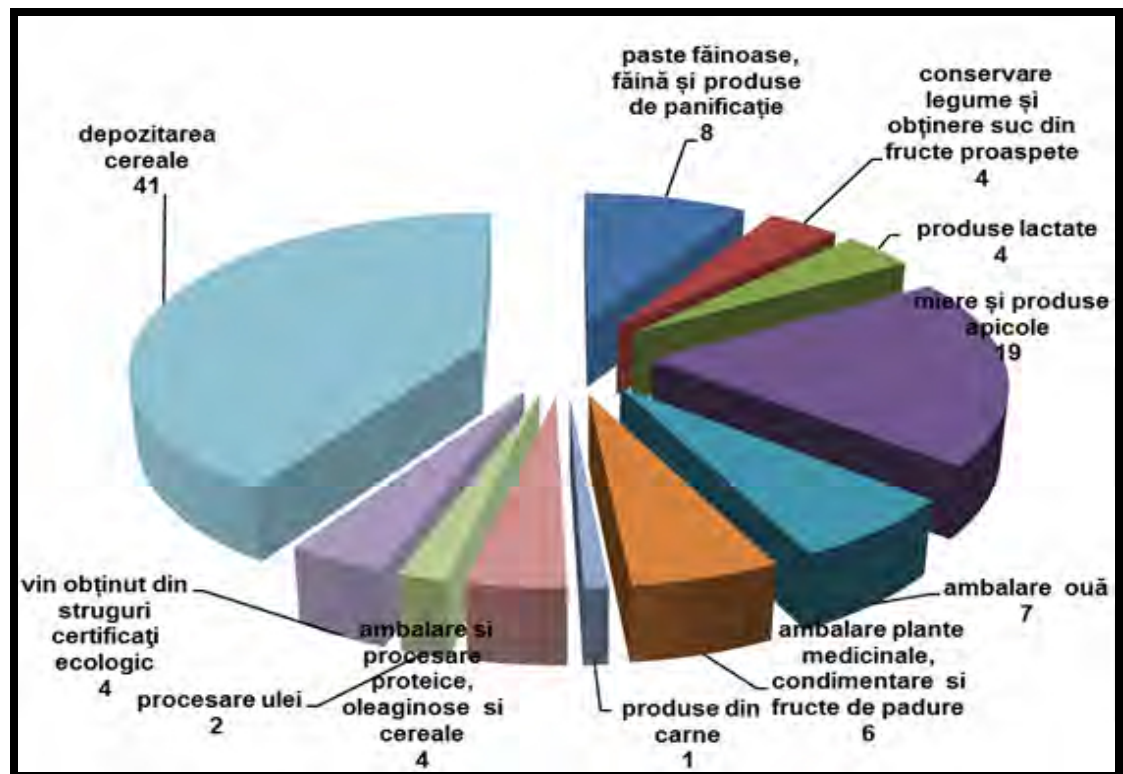


Fig. 6. Certified organic processing unit, in the year 2012 (Source:MARD)

Among the most important organic certified processing unit 103 at 2012, 41 are for storing grain, honey and bee products 19 and 8 for pasta, flour and bakery products.

In order to receive support from the state, both recipients of crop production, livestock production and those (for birds, cattle and sheep/goats) must meet the following conditions (6): a) be registered each year requesting specific support to the Ministry of Agriculture and Rural Development as organic producers;

- b) have a contract with an inspection body and certification body approved by the Ministry of Agriculture and Rural Development;
- c) hold a certificate of conformity/master certificate/certificate of conversion confirmation issued by manufacturer inspection and certification body that issued the policy;
- d) have no outstanding debts to the state budget or local government.

## CONCLUSIONS

- European Union seeks a renewal of sustainable economic activity through:
- defining and implementing various aspects of the green economy;
    - financial assistance and transfer of technology and know-how (especially developing countries);
  - substantiate various aspects of governance for sustainable development, involving the whole of society in Europe to optimize vision of Rio and providing the necessary political support.

The new economic system based on sustainable development is likely to become the solution to overcome the environmental, economic and social, also regarding crisis management and its effects. In this respect, it is necessary to take measures using appropriate policies to create conditions to support economic growth and poverty reduction.

Green economy requires the use of natural resources, energy and new technologies with cleaner production methods in order to promote economic growth and create new jobs. Through this concept, we need to create new models of sustainable consumption and production, which does not force the ecosystem. Sustainable development requires dynamic, requiring constant change, adaptation and research, all of which are closely related to environmental conservation and proper use of natural resources. It is important to note that agricultural production has become more efficient in recent years, suggesting a new evolution in terms of satisfying the growing demand for food while reducing environmental impact.

It is clear that sustainable agriculture can not be "pure green" because you have to the fullest, but judiciously, achievements of chemistry and biology to raise crop yields. Rational use of fertilizers and other chemicals is mandatory to remember one of the main objectives of sustainable agriculture is food security, and these chemicals contribute to increased yield by about 40 % compared with other technological methods, and this cannot be neglected in the policy of population with food. But at the same time, an equally important objective of sustainable agriculture and environmental protection is therefore an ecosystem agriculture must become less polluting and energy intensive. This can be achieved by designing a type of technical progress to eliminate the shortcomings of industrial-type agriculture and to put the focus of increasing biological factor, using bioengineering and biotechnology in plant and animal growth.

Organic farming is actually synonymous with agriculture coming years, which ensures the integrity of the biosphere, maximizing the production capacity of agroecosystems and obtain good quality products. It will require a more conscientious and imaginative work and provide an abundance of food while reducing fossil energy consumption, maintaining or enhancing natural fertility of the soil, improving the living environment of human and environmental protection as a whole.

At the end of this paper we can draw several important trends that can help Romanian bioeconomy development in the context of organic farming and the use of renewable energy sources:

- Respect for the environment. Farm organization and production in harmony with nature, without an intoxicated with various chemicals, misused, or abuse, or mismanagement of animal manure.
- Maximizing profitability at farm level in terms of optimum use of available resources (financial, material and human).



- Conservation and carefully managing soil water. Most of the time farmers working in conditions of very low humidity in the soil, such as agricultural technology to preserve and protect the evaporation of water from the soil without such an increased production and significant savings for both farm and adjacent community of people.
- Strengthening agricultural land and their work effectively are elements that lead to substantial savings both fuel and time.
- The application of appropriate technologies tillage and recording to an increase in land improvement works.
- Better planning so that activities can not be managed in crisis (lack of funding, lack of appropriate technology, lack of logistics and many other critical situations).
- Improved mechanization equipment fleet at the farm level brings not only a more efficient use them, but also to reduce fuel consumption and pollutant emissions.
- Improving nutrition in farm animals (both qualitative as well as technology) can lead to both a qualitative and quantitative increase, especially at a discount issued harm animals.
- The intensive cultivation of plants with high energy potential for providing alternative energy resources.

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