ECOLOGICAL AGRICULTURE-AN OVERVIEW ON ROMANIA AND EUROPE IN TERMS OF SUSTAINABILITY

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Abstract
The aim of this research is to provide an outline of the ecological agriculture is situated in Europe and Romania as well as a result of transition from conventional farming to the green one. The relevance of this paper is illustrated by the worldwide importance of ecological agriculture, which mean it contributes to a better environment, lifestyle conditions for its consumers, positive impact for biodiversity and also improved work conditions for farmers through the instruments used by the responsible authorities. Used methodological framework is based on statistical data analyses for surfaces under organic agriculture and also the operators who are certified as ecologic farmers in Romania during 2010-2021.

Keywords: *ecological agriculture, circular economy, agri-food sector, sustainable development.*
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Introduction

Ecological farming has been shown to boost agricultural landscape variety, including carabid beetles, woody plants, and birds. According to such analyses, agroecological farming approaches often boost biodiversity. This is especially important because modern agriculture has resulted in a loss of variety in the agricultural environment, and it has been proposed that large-scale conversion to organic farming might mitigate some of this loss.
The preponderance of experts agree that there are currently a plenty of food products from the United States and throughout the world - with just enough confidence that no one will suffer from hunger or be in a state of food insecurity. In addition, over half of the world's population - 3 billion people - is malnourished. According to the USDA, 38,2 million people in the United States lived in poverty in 2004, including 13,9 million children. Furthermore, current environmental and sociological issues in conventional agriculture are a hot topic. Water pollution with nitrogen and phosphorus as well as pathogens, pose a risk to people's health like cancer or intoxications. Today's organic food system is a complex amalgamation of small and large food producers, local and international distribution networks, and a wide variety of products, including fruits, vegetables, meats, dairy, and processed foods. Initially, organic food production was primarily centered on small farms and local distribution of fresh produce. This explosive increase can be attributed to both growing consumer trust in ecological products and worries about the potential health dangers and environmental effects of conventional food production techniques. Consumer trust in food has decreased as a result of recent food crises like mad cow disease and foot-and-mouth disease, particularly in conventionally produced foods that may have been developed with pesticides, antibiotics, and other chemicals (Winter et al, 2006).
Aceleanu (2016) notes since 1991, when the EU adopted two directives that defined organic farming and offered support for organic agriculture as a method of ecologically responsible production, ecological agriculture has gained prominence as a matter of common EU policy. Legal and financial aspects that influenced the growth of sustainable agriculture were put into place by the member nations in the years that followed, but financial backing was crucial

for the establishment of these farms. The EU's support for eco farming has been and remains largely dependent on the Common Agricultural Policy (CAP). Due to the financial assistance that farmers received, the CAP reform had a favorable effect on the economy, particularly for organic cropland farms. Green farmers' competitiveness improved as a result of the CAP reform, which included a decrease in price support paired with compensating payments and the establishment of agri-environmental programs. Farmers are directly funded over a period of five to seven years as part of the rural development programs for the years up to 2020, and pertinent legislation is being reviewed and updated.
Also, from an economical perspective, there is debate in the research literature about how beneficial ecological farming is since it can improve and extend to the point where it is competitive with conventional farming.

Literature Review
Ecological agriculture is frequently advocated as a way for producing food with a lower environmental effect. Despite accounting for less than 1% of global agricultural acreage and less than 5% of retail sales in the majority of high-income nations, it is one of the fastest growing food industries. Most individuals in high-income nations consume organic at least periodically. Today, organic is the most well-known food label, with most customers understanding its fundamental concept. And, in most countries, organic farming is the only agricultural style whose management techniques are legally required. Ecological food is thus one of the few ways for people to have some influence and information over how their foods are made. Organic management differs from sustainable or agroecological management within this organic methods are properly described and, in many countries, governed by legislation. In most countries, regulation and certification are key to the contemporary notion of organic agriculture. Regulations are thus a good location to start learning about how the various organic players' perspectives have been defined and what organic agriculture implies today (Seufert et al, 2017).
Ecological Agriculture
Ecological farming is a system that uses less intensive practices. Therefore, it is expected to deliver more green goods and services than conventional agriculture, even in its modified forms, such as integrated farming or minimal farming. Moreover, organic farming effectively reduces the risks of the environment without using some potentially harmful technologies of intensive agriculture, such as pesticides, herbicides, synthetic nitrogen fertilizers, GMO crops or veterinary antibiotics and anthelmintics.
Broadly speaking, organic farming can be described as increased diversification at both the agricultural and regional scales. It is a system that leads farmers and rural communities to economic independence from expensive agricultural inputs through the use of systems seed growing cooperatives; natural biological control agents; soil fertility management through recycling, nitrogen fixation and green manure; and habitat management as a prevention strategy against pests, diseases and weeds. In 2007, according to studies carried out by the FAO, 0.61% of the agricultural land reported worldwide was intended for certified organic agriculture, increasing to 1.43% in 2017. However, it is widely known that much of global food production systems are non-certified organic farming, often at the subsistence level.
Bostan 2016, notes with exports from numerous third countries and sales totaling 95% of the global market, the European Union and Canada are the two most developed markets in the world for the sale of ecological goods. In terms of absolute numbers, the European market for ecological products, also known as "bio" or "eco," is somewhere in the neighborhood of 20 billion euros per year, and in the case of Romania, the market for those products varies between 200 and 300 million euros per year. According to *FAO 2013*, the stability of the

food supply is linked to other aspects of food security, such as access to and consumption of food, as well as stable economic conditions for food. The term "ecological agriculture" refers to both the production methods organized around specific organic and biodynamic certification schemes that are "organic farming certified" and those that, while adhering to organic principles in their production methods, are "organic uncertified."
The vast majority of people identify organic items as luxury products. The price range that customers are willing to pay has been put to the test in certain research. Results obtained indicate that consumers in the USA and the EU are willing to pay a surcharge (an increase to the actual price of conventional items) of up to 40% when purchasing organic products (Vapa Tankosic et al., 2018). According to some study, consumer interest in organic food items will likely depend more on price differences than anything else since consumers want healthy choices. The price of organic goods will have the most impact on the propensity for demand to decline. The most common purchase barrier for organic goods is their high cost and limited market availability due to supply irregularities (Yiridoe et al, 2005).

Ecological Agriculture in Romania
Ecological farming is an essential component of sustainable agriculture in Romania, which, despite a recent growing trend, accounts for just 2% of overall agricultural production. The government are showing an increased interest in the growth of organic agriculture through a variety of incentives, as well as teaching, marketing, and coordinating local farmers to sell their products on domestic and international markets. Furthermore, Romania has favorable natural characteristics, such as soil and climate, for organic farming on around 15% of its farmed territory (Popovici et al, 2018). Also, Romanians have recently adapted to a more healthier and cleaner way of life, which includes consuming organic foods. The fact that the majority of these items are manufactured in Romania and bought on the domestic market demonstrates that consumers want to support local business endeavors. The efforts mentioned define the potential for growth of the national organic industry and illustrate its potential for interest (Zapucioiu, 2021).

Table 1 Ecological products in relation to natural products and conventional products

Ecological Product	**Natural Products**	**Conventional Products**
• cultivated in non-polluted areas • the used species and varieties are characterized by high resistance to environmental conditions • naturally fertilized soil • the fodder is prepared with raw materials allowed by the organic farming standards • the products are not genetically modified • No synthetic chemical additives are used	• they are obtained in agriculture without the use of chemical substances	• they are also obtained in agriculture, but they assume the use of chemicals.

Source: Bostan, I., An analysis of the bio/eco products market refering to the EU and Romania, 2016

According to Czarnezki (2011), the terms eco or ecological, bio, and organic are actually synonymous. All three refer to a product that contains at least 95% organic materials. The other 5% is reserved for air pollutants such as acid rain or pesticides carried by the wind by a nearby farm or land, as well as the usage of other (non-ECO) substances that are likewise explicitly described. Although organic products don't include artificial food additives like preservatives, colors, flavors, and thickeners, they have a shorter shelf life than conventional items. These items are typically more expensive than standard products under the circumstances described above.

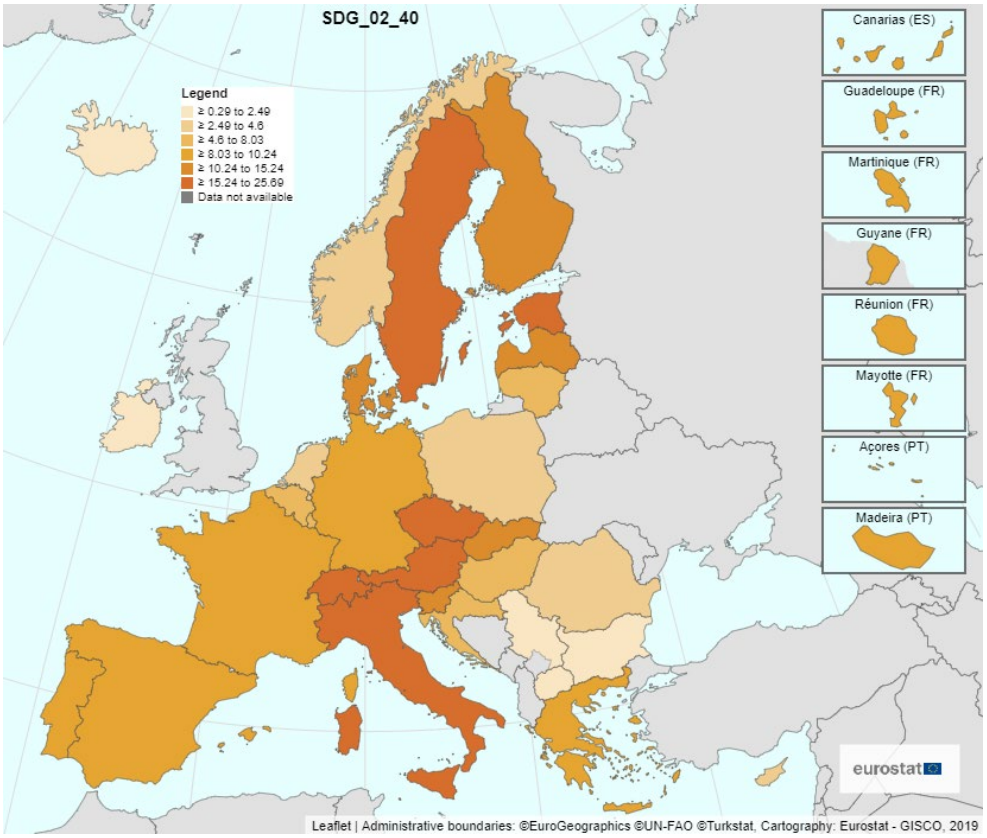

Figure 1. European areas under ecological agriculture in Europe (2020)
Source: Eurostat

Organic agriculture occupies an important place in the European economy. Eurostat statistics show that this type of agriculture is predominantly used by EU states as follows: on the first position in the hierarchy of European states with the largest area used for organic agriculture is Austria with 25,69%, next position is occupied by Estonia with 22,41%, followed by 20,31%, Swizerland on the forth position with 16,98% and Italy 15,97%. Only 3,45% from Romanian areas are destinated for green farming.
Romania is ranked 20th globally for exporting organic products and 16th globally for the total amount of certified organic farmed land. Given that the agricultural area used in the

ecological agriculture system only accounts for 3.38% of all the agricultural land used in the nation, this is quite an accomplishment (Jeločnik et al, 2015).

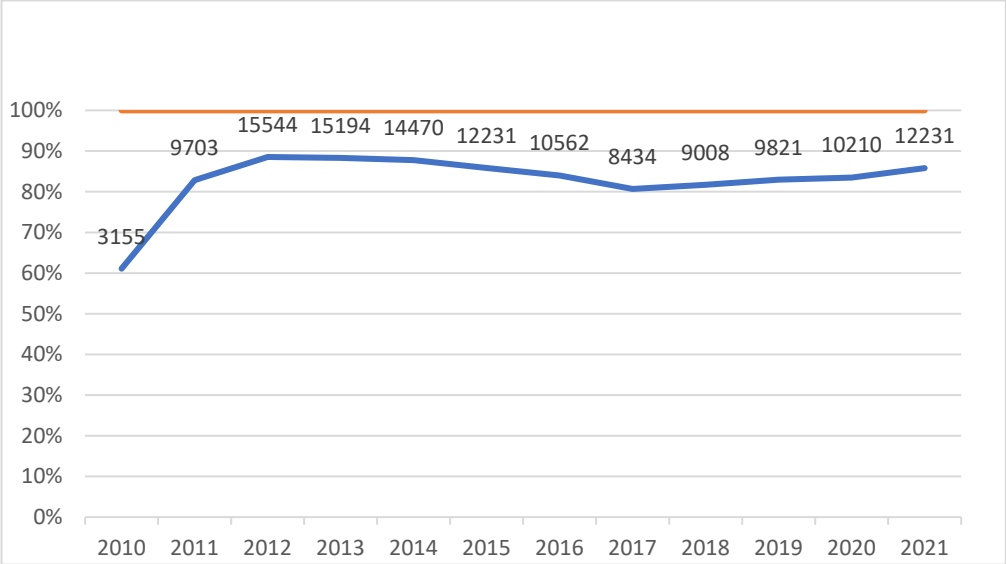

Figure 2. The fluctuation of total number of certified operators in ecological agriculture in Romania

Source: MARD

Numerous factors contribute to the issue of inadequate promotion of Romanian agri-food products, including: the inconsistent quality of the products over extended periods of time, the impossibility of meeting high and steady volumes, the weak international market presence of some domestic distributors, and the weak or nonexistent branding of the relevant products. The poor relationship between manufacturers is one of the issues. The degree of sophistication and local business drive also have a role. Last but not least, although becoming increasingly active in recent years, public support for Romanian products still does not exert a significant enough influence. Also, this severe decline in the number of operators include a lack of organic agricultural expertise and knowledge, the inability to integrate into a supply chain, a lack of a market, and a failure to comply with national and Community regulations. Nevertheless, there is a there is a good but still untapped potential to recognize and promote their local growth by including them in EU quality schemes, namely Traditional Specialty Guaranteed (TSG), Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) or certificates.

Conclusions

Ecological agriculture is a multifaceted approach to long-term sustainability. Unlike conventional agriculture, it does not place emphasis on single high-impact measures. It is efficiently decreases environmental hazards without utilizing potentially dangerous intensive agricultural practices such as pesticides, herbicides, synthetic nitrogen fertilizers, genetically modified organisms (GMOs), or veterinary antibiotics and anthelmintics. The majority of consumers consider organic products to be high-end. When purchasing organic products,

consumers are ready to pay a premium price (an increase in the actual price of conventional items) of up to 40%. Organic agriculture occupies an important place in the European economy. Countries like Austria, Estonia, Sweden, Switzerland or Italy are the first 5 countries in terms of organic farming. In Romania the potential of ecological farming is not exploited at his maximum. This aspect could be improved if dedicated authorities will assure financial instruments for helping farmers in order to ensure the expansion of the green products offer and consumer education for taking the advantage of the benefits of this kind of products (health, environment etcetera).

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