

ORGANIC APPLE CULTIVATION IN THE EUROPEAN UNION – A CURRENT SITUATION OF CULTIVATED AREAS

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Keywords: *Apple, ecological culture, states, EU, cultivated areas*

ABSTRACT

Apple cultivation is one of the most important, both worldwide and in Europe. This paper aims to analyze the literature and identify current trends in Europe with regard to organic apple cultivation. Data analysis shows an upward trend in cultivated areas, highlighting a growing consumer interest in organic apples, which are produced in a sustainable and environmentally friendly way. Among the countries that grow organic apples, France stands out for an area between 25.65% and 28.76% of the total areas dedicated to this crop in the European Union, while Romania ranks sixth, with approximately 3,883.67 hectares cultivated. Key factors contributing to the development of organic apple cultivation include support policies from the European Union, market demand, and favourable climatic and geographical conditions.

INTRODUCTION

In recent years, society's awareness of environmental issues, such as species extinction and resource depletion, has increased, as has the demand for sustainably produced food (Hueppe & Zander 2024). The application of chemical fertilizers with nitrogen (N) has promoted crop production more than fourfold and has contributed greatly to overall crop production and food security. Excessive application of N strongly affected the absorption of other chemicals from the soil and caused a number of environmental pollution problems (Li et al. 2024). Organic farming has emerged as a nature-based approach to support agricultural and horticultural production while reducing harmful environmental impacts (Favarin et al. 2024). The main objective in organic production is to maintain soil fertility in the long term (Lepp et al. 2024). In classic fruit production, the highest expenses fall on plant protection (Antal et al. 2024). The apple tree (*Malus domestica* Borkh.) is one of the most important fruit crops in many countries (Stoica et al. 2024). Due to its pleasant taste and high nutritional values, the apple is one of the most popular fruits consumed worldwide (Arnold & Gramza-Michalowska 2024). The productivity of the apple tree is affected by several biotic and abiotic factors. Among them, water scarcity and soil salinity have a significant impact on the physiological and metabolic processes of the apple, leading to economic losses (Verma et al. 2024). Organic apples are a key product for responsible consumers, with a very high popularity lately (Lepp et al. 2024, Stoica & Hoza 2023). Consumers' growing concern for healthier

and safer food, along with environmental protection, has highlighted the role of agronomic practices as one of the main determinants of food quality and environmental protection (Roussos & Gasparatos 2009). In this regard, the European Union has taken a clear stance in support of organic crops, including fruit, by integrating them into its sustainable development strategy. A central element of this approach is the objective of converting 25% of the EU's agricultural land into organic areas by 2030 (Paull 2024). This paper aims to analyze the literature and identify current trends in Europe regarding organic apple cultivation.

MATERIAL AND METHODS

The study was based on the analysis of scientific articles, research reports and relevant works related to organic fruit growing, as well as European regulations on organic farming, including the Common Agricultural Policy (CAP). Data collection was carried out from the website of the Research Institute for Organic Agriculture (FiBL).

RESULTS AND DISCUSSIONS

Current situation in the European Union. Organic apple cultivation is gaining more and more ground in Europe due to the growing demand for healthy, sustainable and environmentally friendly products. In Italy, organic production was positively perceived by apple consumers, and in Denmark, preferences for organic apples has also influenced interest in local apples (Bossi Fedrigotti & Fischer 2020). Almost all Member States of the European Union are involved in the production of organic apples, thus underlining the importance of this sector in European agriculture (Table 1). France clearly distinguishes itself as a leader in terms of areas cultivated with organic apples, with an area of 16657.6 hectares. This area represents a significant share of the total area cultivated with organic apples in the EU, ranging from 25.76% in 2020 to 28.76% in 2021. This dominant position of France can be explained by a combination of factors, including a favourable climate for apple cultivation, the fruit growing tradition, and an ever-increasing demand for organic products from consumers. France has invested in the development of sustainable and innovative agricultural practices, supported by national policies that encourage organic farming, which allows it to remain at the forefront of this sector (Willer et al. 2023). Italy, which ranks second in the European Union with an area cultivated with organic apples of 8686.9 hectares, holds a share between 14.05% and 14.49% of the total EU area in the period 2020-2022. Although Italy has significant potential due to its climatic diversity and variety of apple varieties, challenges faced in the organic sector, such as international competition and strict regulations, can influence the pace of expansion of cultivated areas (Gamboni & Moscatelli 2015). The top of cultivated areas was completed by Germany (7650.3 ha; 12.60%), Poland (7527.6ha; 12.42%) and Hungary (4898.6ha; 8.08%). Over the period studied, Romania ranked sixth in the European Union in terms of the area dedicated to organic apple crops, with an average area of 3883.6 hectares, which represents 6.41% of the total area cultivated with organic apples at European level. Although some EU countries have recorded slight decreases in the areas cultivated with organic apples, the general trend in the European Union is increasing. This expansion reflects a growing demand for organic horticultural products, driven by changes in consumer behaviour, who are increasingly interested in healthy and sustainable eating.

Table 1

Area of organic apple cultivation over 2020-2022 in European Union Member States

Country	Organic area						Mean (2020-2022)	
	2020		2021		2022		(ha)	(%)
	(ha)	(%)	(ha)	(%)	(ha)	(%)		
Austria	1600.6	2.80	1600.6	2.61	1687.9	2.67	1629.7	2.69
Belgium	337.0	0.59	363.0	0.59	363.0	0.57	354.3	0.58
Bulgaria	705.0	1.24	557.2	0.91	766.2	1.21	676.1	1.12
Croatia	611.0	1.07	680.0	1.11	600.0	0.95	630.3	1.04
Czech Republic	1640.5	2.87	1492.3	2.43	1523.5	2.41	1552.1	2.56
Denmark	528.0	0.92	569.0	0.93	638.0	1.01	578.3	0.95
Estonia	465.0	0.81	464.0	0.76	432.8	0.68	453.9	0.75
Finland	73.0	0.13	64.0	0.10	61.0	0.10	66.00	0.11
France	14638.8	25.65	17667.0	28.76	17667.0	27.91	16657.6	27.48
Germany	7400.0	12.96	7600.0	12.37	7951.0	12.56	7650.3	12.60
Greece	344.0	0.60	344.0	0.56	282.5	0.45	323.5	0.53
Hungary	4383.0	7.68	4635.0	7.55	5678.0	8.97	4898.6	8.08
Ireland	52.0	0.09	57.0	0.09	54.0	0.09	54.3	0.09
Italy	8273.0	14.49	8893.9	14.48	8893.9	14.05	8686.9	14.30
Latvia	711.0	1.25	725.0	1.18	725.0	1.15	720.3	1.19
Lithuania	669.2	1.17	657.2	1.07	805.2	1.27	710.5	1.17
Netherlands	257.0	0.45	271.0	0.44	271.0	0.43	266.3	0.44
Poland	7639.0	13.38	7472.0	12.16	7472.0	11.80	7527.6	12.42
Portugal	237.0	0.42	179.0	0.29	174.0	0.27	196.6	0.32
Romania	3615.0	6.33	4018.0	6.54	4018.0	6.35	3883.6	6.41
Slovakia	387.0	0.68	363.0	0.59	363.0	0.57	371.0	0.61
Slovenia	360.0	0.63	358.0	0.58	358.0	0.57	358.6	0.59
Spain	1839.0	3.22	2076.8	3.38	2145.4	3.39	2020.4	3.33
Sweden	304.0	0.53	322.0	0.52	380.0	0.60	335.3	0.59
Media UE	57081.2	100	61429.2	100	63310.6	100	60607.0	100

In the European Union, countries such as Belgium, Finland, Slovenia, Ireland, and Portugal have recorded significantly smaller areas dedicated to organic apple crops, each accounting for less than 1% of the total area under cultivation in the entire Union. This situation reflects a number of country-specific factors that contribute to the decrease in production volume in the organic fruit sector. Ireland had the smallest cultivated areas, with only 54.3 ha (0.09% of the EU total). Other EU countries that do not register organic apple crops were Cyprus, Luxembourg and Malta. As regards the average of the three years (Table 1), the Member States are in the same order as the areas cultivated annually, the percentage differences being obvious, thus France had an average of 13.15% more areas than the second ranked, Italy. Romania was 1.67% behind Hungary. However, there were a number of 10 states whose average cultivated areas were below 1% (Table 1). The total area under organic apple cultivation at EU level (Table 1) has increased steadily, registering a positive trend in recent years, reaching from 57069.2 ha in 2020 to 63310.6 ha in 2022. Over 2020 and 2021 there was an increase of 4360 ha, and over 2021 and 2022, the increase was approximately 1881.4 ha. The average area under organic apple cultivation in the EU has increased as well as the total area each year. But the biggest difference was over 2020 and 2021, with an increase of 181.67 ha. Over 2021 and 2022, the average cultivated area continued to grow, but at a slower pace, registering an increase of 78.39 ha, below the

middle of the previous year.

Factors influencing the development of organic farming

The development of organic apple cultivation is influenced by several factors, the most relevant of which are European support policies, market demand, favourable climatic and geographical factors. Agricultural policies and regulations play a crucial role in the development and support of organic fruit growing in the European Union and they are largely coordinated through the Common Agricultural Policy (CAP), which provides a legislative and financial framework for sustainable agriculture, including organic fruit growing. The CAP includes specific agri-environment programmes that encourage sustainable practices and the protection of biodiversity, and support farmers through subsidies and direct payments and agri-environment and climate measures (Aznar 2023, Radutoiu et al. 2023). Organic fruit growing is regulated by strict standards, established by European legislation (e.g. Regulation (EU) 2018/848 on organic production), and organic products must comply with strict labeling standards, to ensure transparency and trust for consumers.

In terms of market demand and consumer preferences, they are increasingly aware of health and the impact of products on the environment and in this way the demand for organic fruits, including apples has increased (Rahman et al. 2021). The EU's internal market for organic products is growing, but competition remains an influencing factor. Organic farming offers farmers opportunities to increase the added value of their products, both in supermarkets and through alternative sales channels. This is possible by developing collaboration, improving infrastructure for green products, and integrating upstream operations into the supply chain (Orsini et al. 2020).

Organic farming is also influenced by organic technologies and innovations in terms of pest and disease control methods, but also by modern technologies that help manage natural resources sustainably, which are essential for the success of organic crops. Ecological approaches that can be integrated into pest management strategies in apple orchards, focus on the use of biological, cultural, and physical control strategies (Shaw et al. 2021). A combination of organic farming and new technologies is essential to overcome its limitations and challenges, and innovative methods and modern approaches pave the way for a more sustainable farming system, contributing both to increasing productivity and improving farmers' life quality in an environmentally friendly way (Gamage et al. 2023; Cosmulescu et al. 2024).

Climatic and geographical factors also contribute, to a large extent, to the success of organic crops. Organic apple cultivation is affected by the climate, as climate change can lead to droughts, floods or increased pest pressure, making organic production often more vulnerable to extreme weather changes, as it does not rely on intensive methods of disease and pest control (Bacelar et al. 2024). The choice of assortment is essential for the success of organic apple cultivation. Depending on the climate and soil in each region, farmers must choose apple varieties that are better adapted to local conditions and resistant to disease, without relying on chemicals (Stoice & Hoza 2023; Stoica et al. 2024; Fotirić Akšić et al. 2022). The development of organic apple cultivation requires specialized knowledge of sustainable cultivation techniques, organic fertilization, and pest management (Wolter 2020). A lack of adequate training can hinder the widespread adoption of organic farming. Wolter (2020) believes that a strategic direction in the organic apple sector could be to increase the demarcation from conventional agriculture, and the

success of the organic sector provides an opportunity to create strong financial partnerships and raise awareness needed to expand this sector. All these factors directly influence the ability of EU farmers to develop and expand apple crops organically. A balance between political support, market access and technological innovation is essential for sustainable growth in the sector.

CONCLUSIONS

Apple cultivation, whether practiced in the classic or organic system, continues to be a predominant crop in the European Union, evidenced by the constant increase in cultivated areas each year. Almost all EU Member States are involved in the production of organic apples, with a few exceptions, due to a number of country-specific factors that contribute to the decrease in the volume of production in the organic fruit sector. The largest areas dedicated to this crop are in France, but also in other countries with a solid tradition in fruit production (Italy, Germany, Poland, Hungary). The general trend in Europe is upward, indicating an increased consumer interest in organic apples, grown in a sustainable and environmentally friendly system. Important factors influencing the development of organic apple cultivation include support policies from the European Union, market demand and favourable climatic and geographical conditions.

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