THE COURSE AND EVOLUTION OF AGRICULTURE IN CUJMIR, MEHEDINTI COUNTY

Okros Adalbert[1], Casiana Mihuț[1], Anișoara Duma-Copcea[1], Antoanela Cozma1, Stroia Marius[1], Carmen Durău2, Vlad Dragoslav Mircov2, Borcean Adrian[2]

[1] Department of Soil Sciences, Faculty of Agriculture, "King Mihai I" University of Life Sciences of Timișoara, Calea Aradului nr.119, 300645 Timișoara, Timiș country, Romania
[2] Department of Agricultural Technologies, Faculty of Agriculture, "King Mihai I" University of Life Sciences of Timișoara, Calea Aradului nr.119, 300645 Timișoara, Timiș country, Romania
Email: casiana_mihut@usvt.ro

Abstract
Agriculture is the foundation of civilization and remains one of the key areas for food security and sustainable development. This study analyzes the evolution of agriculture in Cujmir commune (Mehedinti County, Romania), based on data collected from the local administration and through interviews with farmers. The research follows the dynamics of cultivated areas, the structure of the predominant crops and the level of productions obtained in the period 2023–2024. The results show a high share of cereals (wheat, corn, barley), complemented by technical crops (sunflower, rapeseed) and vegetables (tomatoes, onions, cabbage, cucumbers). Yields vary significantly depending on climatic conditions and low fertilisation, reflecting predominantly conventional agriculture with subsistence influences. The study contributes to the understanding of local agricultural particularities and provides a useful database for the development of rural and sustainable development strategies in southwestern Romania.

Introduction

Agriculture has been, throughout history, one of the main pillars of social and economic development, being indispensable for ensuring food and basic resources for the population [1,2]. Globally, transformations in agriculture have been driven by factors such as climate change, population growth and pressure on natural resources [3,4,5]. In Europe, common agricultural policies have aimed to adapt to new economic and technological realities, with a focus on productivity and environmental protection [6,7].

In Romania, the transition from collectivized agriculture to private structures has generated a sharp fragmentation of land, with small-scale farms, which limits competitiveness on the European market [8,9]. Studies show that medium-sized family farms are the most efficient in terms of production-cost ratio [10,11]. At the same time, soil fertility and the application of modern agricultural technologies remain key factors for increasing yields [3,9].

At the regional level, in southwestern Romania, pedoclimatic conditions favor a diversity of crops, but climatic instability and low input levels affect yields [12,13,14,15]. In Mehedinti County, agriculture is characterized by a combination of cereal and technical crops, complemented by vegetable growing, melons and subsistence crops, which play an important role in the local economy and in farmers' incomes [2,13].

The purpose of this paper is to highlight the evolution of agriculture in Cujmir commune in the period 2023–2024, by analyzing the cultivated areas, the productions achieved and the technologies used, in order to formulate directions to improve local agricultural sustainability.

Material and methods

The research was based on statistical data and direct observations made in Cujmir commune, Mehedinti County, in the period 2023–2024. The primary data were provided by the Cujmir City Hall and the local Agricultural Chamber, and the qualitative information was obtained through discussions with farmers in the area.

The analysis included:

- record of cultivated areas by types of crops (cereals, technical plants, vegetables, melons);
- recording of total productions and average yields per hectare;
- evaluation of the use of chemical and organic fertilizers;
- comparison between agricultural years 2023 and 2024.

The data were processed into tables and graphs to highlight variations in production in relation to climatic and technological factors. The methodology follows the approaches recommended in the literature on the monitoring of agricultural productions and the analysis of soil and climatic resources [3,8,9,11,16].

Results and discussions

Agriculture in 2023

Table 1. Cereal crop areas

Culture	Area ha	Tonne production
Autumn wheat	1300	5460
Spring barley	70	266
Corn kernels	1328	5046
Autumn barley	200	800
Spring oats	8	0
Sunflower	550	880
Dried peas	250	375
Bean	5	1

As can be seen from the table and figures above, the main cereal plants cultivated in 2023 are winter wheat with 1300 ha and a total production of 5460 tons, which represents an average production per hectare of 4200 kg/ha, a lower production than in 2022. Maize ranks 1st with a cultivated area of 1328 ha with a total production of 5046 tons, which represents an average production of 3.8 tons/ha, a lower production than in previous years. This is due to adverse weather conditions. This is followed by sunflower on an area of 550 ha and a total production of 880 tons, which translates into an average production of 1600 kg/ha, then we find oats, barley and barley in different areas. In relation to pea and bean crops, along with early and summer potatoes, the cultivated areas occupy a fairly large area, peas occupy an area of 250 ha with an average production of 1.5 tons/ha, beans occupy 5 hectares with an average production of 0.250 t/ha, and potatoes are found on 4 hectares with an average production of 4t/ha. The yields of these crops are lower than in 2022, due to the lack of rainfall.

Table 2. Areas in vegetable crops

Culture	Area ha	Tonne production
Early and semi-early potatoes	1	4
Summer potatoes	3	11
Tomato	30	120
Dried onion	5	13
Dried garlic	5	12
Cabbage	6	60
Pepper	6	72
Cucumbers	1	12
Carrots	2	20
Other vegetables	28	180
Bean pods	1	9
Eggplant	2	18
Cauliflower	2	20

Vegetable crops occupy an area of 88 ha with different areas for vegetable species, this fact being due to the crop rotation with diversified productions according to the species and the care work that has been carried out, offering producers an alternative source of income.

Table 3. Areas in melon crops

Culture	Area ha	Tonne production
Melons	60	480
Melons	10	60

Watermelon and melons, occupying an area of 70 ha, due to the climate and favorable soil conditions, offer an average production of 7.7 tons/ha.

Table 4. Surfaces applied with fertilizers

Chemical fertilizers	Area ha	Tonne Quantity
Nitrogen	3178	165
Phosphate	3178	165
Potassium	3178	48
Natural fertilizers	15	300

The natural and chemical fertilizers applied, as can be seen from the table and graphs above, are quantitatively well below the needs of crop plants, resulting in an average of 50 kg s.c./ha according to the statistical data provided by the agricultural chamber of Cujmir.

3.4. Agriculture in 2024

Table 5. Cultivated areas and cereal crop yields

Culture	Area ha	Tonne production
Autumn wheat	1560	9360
Barley	40	200
Corn kernels	1000	8000
Autumn barley	70	420
Spring oats	8	0
Sunflower	70	175
Rape	300	1200
Dried peas	260	390

As can be seen from the table and figures above, the main cereal crops cultivated in 2024 are winter wheat with 1560 ha and a total production of 9360 tons, which represents an average production per hectare of 6000 kg/ha, a higher production than in 2023. Corn is in 2nd place with a cultivated area of 1000 ha with a total production of 8000 tons, which represents an average production of 8 tons/ha, a lower production than in previous years. This is due to adverse weather conditions. This is followed by sunflower on an area of 70 ha and a total production of 175 tons, which translates into an average production of 2500 kg/ha, then we find oats, barley and barley in different areas, and this year rapeseed enters cultivation on an area of 300 ha, with a total production of 1200 tons, which means an average production of 4 t/ha. In relation to pea crops, along with early and summer potatoes, the cultivated areas occupy a fairly large area, peas occupy an area of 260 ha with an average production of 1.5 tons/ha, and potatoes are found on 4 hectares with an average production of 4t/ha. The productions of these crops are close to 2023, due to the lack of rainfall

Table 6. Areas in vegetable crops

Culture	Area ha	Tonne production
Early and semi-early potatoes	1	4
Summer potatoes	3	11
Tomato	40	160
Dried onion	5	13
Dried garlic	5	10
Cabbage	5	50
Pepper	5	50
Cucumbers	3	36
Carrots	2	20
Other vegetables	25	150
Bean pods	1	8
Eggplant	2	18
Cauliflower	1	10
Pea pods	1	7
Courgette	1	5
Sugar corn	1	3

Vegetable crops occupy an area of 97 ha, with different areas for vegetable species, this is due to the rotation of crops with diversified productions, in 2024 there will also be sugar corn per 1 ha, with an average production of 3t/ha. Depending on the species and the care work that has been carried out, it provides producers with a complementary source of income.

Table 7. Areas in melon crops

Culture	Area ha	Tonne production
Melons	50	500
Melons	10	60

Watermelon occupying an area of 60 ha, due to the climate and favorable soil conditions, offers an average production of 9.3 tons/ha.

Table 8. Surfaces applied with fertilizers

Chemical fertilizers	Area ha	Tonne Quantity
Nitrogen	3178	165
Phosphate	3178	165
Potassium	3178	48
Natural fertilizers	15	300

The natural and chemical fertilizers applied, as can be seen from the table and graphs above, are quantitatively well below the needs of crop plants, resulting in an average of 50 kg s.c./ha according to the statistical data provided by the agricultural chamber of Cujmir.

Conclusions

The study on agriculture in Cujmir commune highlights several major aspects:

1. The crop structure is dominated by wheat, corn and rapeseed, which are the main field crops of the area.
2. Yields vary significantly between years, influenced by adverse climatic conditions and insufficient fertilisation.
3. Agricultural diversity is supported by the presence of vegetable crops and melons, which provide farmers with complementary sources of income.
4. The level of fertilization (on average 50 kg s.a./ha) is below the optimal requirement, which limits the production potential.
5. Local agriculture is characterised by a combination of subsistence farms and commercial family farms, and sustainable development involves investing in modern technologies, increasing fertilisation and adapting crops to climate change.

Bibliography

[1]. Berca, M. (2011). Agricultural production systems. Ceres Publishing House, Bucharest.
[2]. Roman, Gh. V. (2019). Agriculture and rural development in the European Union. ASE Publishing House, Bucharest.
[3]. Blaga, Gh., Filipov, F., Rusu, I., Udrescu, S., & Vasile, D. (2005). Pedology. AcademicPres Publishing House, Cluj-Napoca.
[4]. Lal, R. (2020). "Soil science beyond COVID-19." Journal of Soil and Water Conservation, 75(3), 63A–66A.
[5]. Mihuț, C., Niță L., 2018, Atmospheric Factors used to characterize soil resources https://www.rjas.ro/issue_detail/44, Timișoara, pp. 114-120.
[6]. Oancea, I. (2005). High-performance agricultural technologies. Ceres Publishing House, Bucharest.
[7]. Nită, S., & Okros, A. (2012). Farming systems. Eurobit Publishing House, Timisoara.
[8]. Teaci, D. (1980). Creditworthiness of agricultural land. Ceres Publishing House, Bucharest.
[9]. Crista, F. (2014). Preservation of soil fertility and nutrient management. Eurobit Publishing House, Timisoara.
[10]. Imbrea, F. (2014). Integrated technologies. Eurobit Publishing House, Timisoara.
[11]. Nită, L. D. (2007). Pedology. Eurobit Publishing House, Timisoara.
[12]. Atlas of Romania, Romanian Academy Publishing House, Bucharest, 1980.
[13]. Cujmir Town Hall (2023). Statistical data on agricultural structure.
[14]. Tilman, D., Balzer, C., Hill, J., & Befort, B. (2011). "Global food demand and the sustainable intensification of agriculture." PNAS, 108(50), 20260–20264.
[15]. FAO (2022). The State of Food and Agriculture 2022. Rome: Food and Agriculture Organization of the United Nations.

[16]. IPCC (2022). Climate Change 2022: Impacts, Adaptation and Vulnerability. Cambridge University Press.