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PROMOTING SUSTAINABLE AGRICULTURAL PRACTICES IN AGRICULTURE

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Abstract
Modern agriculture faces many opportunities and challenges. In the future, the world population is expected to rise dramatically. This growing population places a demand for increased food production, which will lead to significant damage to the environment and natural ecosystems. For many years, conventional farming practices have been used in agriculture. As a consequence of a number of environmental risks, such as erosion, compaction, salinization, pollution, loss of biological biodiversity, the quality of agricultural soils is increasingly deteriorating.
In this regard, one of the possible solutions to overcome the negative consequences is to implement sustainable farming practices in agriculture. The new Common Agricultural Policy provides a number of instruments and measures aimed at supporting the agricultural sector. The main idea is to invest funds in promoting the implementation of sustainable practices, with the aim of limiting the use of pesticides and chemicals, while at the same time preserving the necessary nutrients, improving soil fertility, leading to efficient and sustainable management of agricultural lands and natural resources.
This report mainly aims to present some good sustainable agricultural practices implemented by farmers in agriculture. In connection with this, the following tasks are set: outline the role of the Common Agricultural Policy in the context of sustainable agriculture, present good examples of sustainable agricultural practices and, on this basis, derive the main benefits of their application in agriculture. The application of sustainable agricultural practices in agriculture leads to the mitigation of climate change impacts, stabilizes agro-ecosystems and increases their resilience. The protection of the environment and the conservation of natural resources are of priority importance for the production of healthy and safe food in order to improve living conditions in rural areas.
As a result of the conducted research, it is established that nature-saving practices provide a number of diverse ecological, social and economic benefits necessary to minimize the negative impacts on the environment. The new CAP lays the foundation for fairer and more sustainable agricultural farming models. Undoubtedly, the application of sustainable agricultural practices is one of the possibilities to achieve long-term sustainability of agriculture and contribute to stimulating the development of the rural economy on a regional, national and global scale.
Key words: sustainable agricultural practices, Common Agricultural Policy, environment, sustainability, benefits.
JEL: O13, Q01, Q56

Introduction

Modern agriculture faces many opportunities and challenges. As a result of a number of environmental risks, such as erosion, compaction, salinization, pollution, loss of biological diversity, the quality of agricultural soils is increasingly deteriorating.

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In this regard, one of the possible solutions to overcome the negative consequences is the application of sustainable agricultural practices in agriculture. The new Common Agricultural Policy foresees a number of instruments and measures aimed at supporting the agricultural sector. The application of sustainable agricultural practices in agriculture leads to the mitigation of the impact of climate change, stabilizes agro-ecosystems and increases their resilience. Soil and water are one of the vital resources for carrying out agricultural production and for ensuring the stability and balance of ecosystems. The protection of the environment and natural resources are of priority importance for the production of healthy and safe food in order to improve living conditions in rural areas. These practices not only contribute to sustainable development, but also have a positive impact on food security, ecosystems and the well-being of local, regional and global populations.

The Common Agricultural Policy in the context of sustainable agriculture

The Common Agricultural Policy (CAP) was created in 1962 and is a set of laws and regulations, and its main tasks are related to providing affordable and safe food products for the population, maintaining a fair standard of living for farmers and preserving the natural environment and biodiversity. It is a tool to manage the transition to a sustainable food system and to strengthen the efforts of European farmers to contribute to the EU's climate and environmental goals. It is key to securing the future of agriculture as well as achieving the objectives of the European Green Deal. It seeks to secure a sustainable future for European farmers, provide more targeted support to smaller farms and enable greater flexibility for EU countries and their adaptation to changing conditions (https://agriculture.ec.europa. eu/sustainability/ environmental-sustainability/sustainable-agricultural-practices-and-methods_bg).

This report ***mainly aims*** to present some *good sustainable agricultural practices implemented by farmers in agriculture.* ***The main emphasis*** is placed on the Common Agricultural Policy in the context of sustainable agriculture, good examples of sustainable agricultural practices are presented and, on this basis, the main benefits of their application in agriculture are derived.

Farmers have the opportunity to apply green practices in modern agricultural holdings, which are environmentally friendly in order to preserve the properties of the soil, protect biological diversity and preserve nutrients in it. They can be supported with the help of direct payments, guaranteeing their income, promoting ecological agriculture with care for the protection of rural areas, the landscape and climate change mitigation impacts.

The CAP is built on three main objectives to achieve sustainability in agriculture:

- economic sustainability;
- environmental sustainability;
- social sustainability.

For their implementation, all EU countries use large-scale actions and measures, and each of them prepares a strategic plan for the CAP. Through them, countries provide support to increase farmers' incomes, support the transition to a sustainable model of agricultural production and contribute to achieving the objectives of the **EU Green Deal** (https://ec.europa.eu/commission/presscorner/detail/bg/ip_23_5986). In addition, the plans will contribute to mitigating the effects of climate change by implementing more active actions related to agricultural practices to capture carbon and its storage in soil, promote sustainable management of natural resources and protect and conserve soil ecosystems.

For the period 2023 – 2027, agriculture and rural areas are essential to deliver the Green Deal objectives and the CAP will be prioritized to achieve the ambitions of the Farm to Fork Strategy and the Biodiversity Strategy. The new CAP is aligned with Farm to Fork as the EU's flagship food strategy (Draft National Action Program to contribute to the implementation of the objectives of the "Farm to Fork" Strategy until 2030., 2023). The strategy aims to make the European food system a global standard for sustainability and focuses on reducing food waste and nutrient loss, promoting the transition to a sustainable food system and ensuring access to healthy foods.

From January 2023, the new CAP will be implemented with even more priority importance and with the contribution of agriculture to the protection of the environment and climate. **The new environment and climate schemes** – the so-called 'eco-schemes' – will be funded with 25% of each member country's direct payment allocation. Ecoschemes are a new tool in the CAP to support the transition to sustainable production, with each EU country specifying ecoschemes in their strategic plans to achieve the Green Deal targets. They support farmers in implementing environmentally friendly practices that have a minimal negative impact of agriculture on the environment and climate, thereby contributing to a shift to more sustainable agricultural farming models.

Agricultural practices to be supported by eco-schemes must meet the following conditions:

- cover activities related to climate, environment, animal welfare and antimicrobial resistance;
- to be determined on the basis of the priorities indicated at the national and regional level;
- their ambition must exceed the requirements and obligations according to the established preconditions;
- to contribute to the realization of the objectives of the EU Green Deal.

The set targets for achieving the EU Green Deal by 2030 are related to a 50% reduction in the overall use and risk of chemical pesticides and a 50% use of the more dangerous ones, at least 25% of agricultural land in the EU being occupied with organic farming and significantly increase organic aquaculture, reduce the sale of antimicrobials for

farm animals and in aquaculture by 50%, reduce nutrient losses by at least 50% and the use of fertilizers in the soil by at least 20%. The new CAP is defined by ten objectives related to the EU's general objectives for social, environmental and economic sustainability in agriculture (https://agriculture.ec.europa. eu/common-agricultural-policy/cap-overview/cap-2023-27/key-policy-objectives-cap-2023-27_en).
Figure 1 shows the specific objectives of the Common Agricultural Policy that relate to the implementation of sustainable agricultural practices in agriculture.

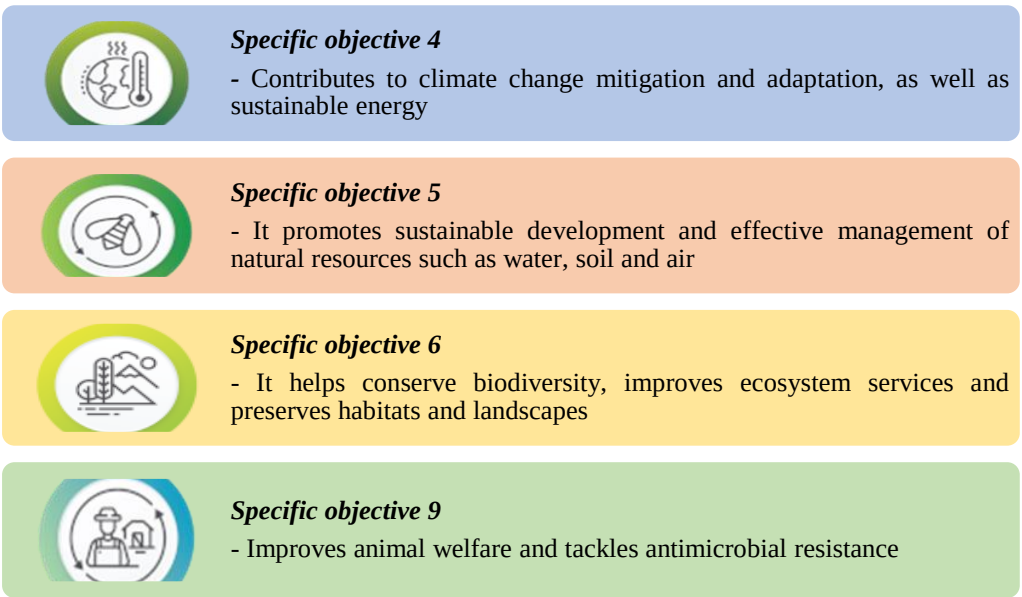

Figure 1. The specific objectives of the Common Agricultural Policy relating to sustainable agricultural practices

The listed objectives have a key role in promoting the implementation of sustainable agricultural practices in agriculture with priority importance for the economy in terms of mitigating climate change and reducing greenhouse gas emissions. Soil is one of the most important natural resources that supplies agricultural crops with the necessary nutrients. The practices applied contribute to ensuring high quality and safe food produced in a sustainable manner and at the same time improve animal health and welfare and address the fight against antimicrobial resistance. The transition to sustainable production systems offers new opportunities and challenges for agricultural holdings with the possibility of achieving sustainability in rural areas (Krasteva I. M., 2024)
According to Yordanova, “The impact of unsustainable agriculture on the environment and human health, there is a growing demand for sustainable agricultural products that can provide opportunities for farmers to switch to more sustainable practices.” (Yordanova, 2023)

In his research, Mitov examines basic indicators related to sustainable agricultural production and its impact on the environment, as key elements for the transformation of food systems into fair, healthy and nature-friendly ones. According to him, a concerted effort is needed to create a food production system that is based on sustainable agricultural practices to ensure healthy and quality food products (Mitov, 2023).
Agriculture will continue to develop, but on the basis of high environmental standards. Resource efficiency will continue to improve, high demands will be placed on environmental factors and agricultural sustainability processes will increase (Kirechev, 2020).

Good examples of sustainable farming

Nowadays, more and more farmers are realizing the importance of sustainable agriculture, looking for ways to reduce the negative impact on the natural environment and thus improve the sustainability of their farm. Sustainable farming practices can help farmers reduce their costs, increase their profits and at the same time preserve the environment and nature. Sustainable agriculture encompasses a variety of approaches and practices tailored to the region and the climatic characteristics of agricultural crops. A number of ***sustainable agricultural practices*** can be considered in the field of agriculture, which have a favorable attitude towards the environment and the climate (https://www.bivatec.com/ blog/sustainable-farming-practices-for-small-scale-farmers):

- ***Crop rotation*** is one of the main practices for sustainable agriculture. It represents an alternation of different cultures in time and place. If the same crop is grown in the same place for a long time, it will lead to soil wear. Therefore, it is necessary to grow different types of crops to improve soil fertility, reduce the impact of pests and plant diseases, and at the same time increase yields.
- A frequently used practice in agriculture is the sowing of ***cover crops or so-called catch crops.*** These are non-marketable plants grown between cash crops to preserve and improve soil fertility. They are used to reduce soil erosion, to suppress weeds and enemies. At the same time, they are a source of nutrients for the main crops and are one of the ways to retain water in the soil in order to preserve the soil structure, making it healthier and more productive.
- Another sustainable farming practice is the use of ***organic fertilizers***. They are obtained from natural sources such as animal manure, compost and plant material. They provide agricultural crops with the necessary nutrients, improve soil structure, increase water retention and reduce the risk of soil erosion.
- ***Integrated Pest Management*** (IPM) is another important practice for sustainable agriculture. IPM is a rational application of a combination of biological, chemical, physical, agrotechnical and selection measures against crop pests, where the use of chemical plant protection products is limited to a minimum. By

implementing integrated pest management, the risks of pesticide use on the environment and human health are reduced, stable agro-ecosystems are maintained and the biological diversity of farms is enriched.

- ***Conservation agriculture*** is one of the modern farming practices for cultivation, which aims to preserve the soil resource, also known as ***No till technology, zero tillage or no-till technology.*** It is an innovative approach to agro-ecosystem management to restore soil fertility while reducing soil losses and production costs (Krasteva, 2021). *Conservation agriculture* is a farming system that enhances natural biological processes, promotes the maintenance of permanent soil cover and contributes to the sustainable production of agricultural crops. At the same time, this type of practice avoids plowing the soil, thus leaving plant residues on the surface to protect the soil from erosion. As a result of the application of conservation agriculture, the structure of the soil is preserved, the balance of biological activity is improved, disturbances in the ecosystem are reduced, thus carbon is preserved in the soil and can be used by the next sown crop. This agricultural practice can be applied in regions that are prone to soil erosion.
- ***Precision agriculture*** – this is a complex system for optimizing agricultural production, using information data about agricultural crops. Different innovative technologies are applied, such as drones, satellite images or field mapping to improve the quality of the harvest. Precision agriculture minimizes the cost of materials and resources, such as water, seeds and fuel, reduces the dependence of agriculture on climatic conditions and provides the soil with the necessary nutrients.
- ***Biodynamic farming*** – this is a method of organic farming developed by Rudolf Steiner in the 1920s, involving holistic practices involving planting, cultivating and harvesting based on lunar and astrological cycles. He is considered a pioneer of the sustainable agriculture movement. Biodynamic farmers observe the cycles of the earth, sun, moon, stars and planets and try to understand their influence on the growth and development of plants and animals. There are biodynamic calendars that provide astronomical information for sowing and growing agricultural crops.
- Another good example of sustainable agricultural practice is the application of ***organic production*** methods by farmers. In organic farming, synthetic pesticides and chemical fertilizers are not used, but emphasis is placed on natural methods of plant protection with the aim of enriching the soil, preserving the biological balance in the farms and maintaining their biodiversity. This method generally promotes crop rotation, cover crops and biodiversity conservation. Organic certification ensures that products meet specific environmental standards and consumers are confident that they are buying sustainable, chemical-free food. Organic production is known for producing healthier and safer food while promoting environmental sustainability. ***Organic farming*** is an integrated system of agricultural management and food production, bringing together the best practices for the benefit of the environment, natural resources and maintaining high

standards of animal welfare. This sustainable innovative model of agriculture has the potential to become an economically efficient sector that stimulates the development of local businesses on a regional, national and European scale (Nikolova, 2021).

- It is possible for farmers to adopt and incorporate ***agroforestry*** as a sustainable agricultural practice in their operations. Agroforestry involves planting trees and other woody plants in agricultural landscapes. This approach effectively sequesters carbon in the soil, reduces food insecurity and is an additional source of income for farmers with the possibility of product diversification. Agroforestry is an environmentally friendly system that provides environmental, economic and social benefits to society. It can be used as an alternative way to maintain the balance of ecological systems, support agricultural production, increase agricultural productivity, support access to cleaner energy and contribute to mitigating the fight against climate change (Kirechev, 2024).
- ***Protection of water resources*** – water is essential not only for people, plants and animals, but also for the development of the economy. It is an irreplaceable and limited resource that must be used in a sustainable manner. However, it is subjected to a number of negative impacts from agriculture, tourism, industry and energy. In recent years, industrialization has led to the pollution of water bodies and disruption of the cycle of ecosystems. The preservation and protection of water resources is not only a regional or national problem, but affects the population at the global level. Therefore, in order to achieve a favorable state of water resources, the choice of the right crops is important. Those that are more adaptable to the climatic conditions of the region are chosen. It would be good to build irrigation systems in case rivers dry up or soil degradation occurs. Rainwater harvesting systems can also be implemented, and urban waste water can be used for irrigation after recycling.

Of course, in addition to the mentioned sustainable agricultural practices, there are other examples such as ***mulching, urban farming, carbon farming, ecosystem services*** and others that promote the sustainability of ecosystems, improve human well-being and eliminate pollution of the environment and nature.

Benefits of implementing sustainable agricultural practices

Traditional agricultural practices with the use of excessive amounts of chemical pesticides and fertilizers can very often be unsustainable, leading to a number of risks to human health and the environment, such as soil degradation, water pollution and a host of other environmental problems. Conventional agriculture is unsustainable to address challenges such as climate change, environmental pollution, food security, energy sources, and biodiversity loss (Anderson, Bruil, Chappell, Kiss, & Pimbert, 2021). This requires the attention of the farmers to be directed to the im-

plementation of environmentally friendly practices sparing natural resources in order to achieve greater sustainability in the development of agricultural holdings in rural areas. A number of ***effects can be listed from the application of sustainable agricultural practices*** expressed in *environmental, economic and social benefits* (https://solarimpulse.com/sustainable-agriculture-solutions#):

- ✓ ***Sustainable farming practices can increase productivity and profitability*** – to improve soil structure, farmers can apply different methods, such as crop rotation, cover cropping or integrated pest management. This will reduce the need for expensive inputs, leading to increased crop yields, higher profits for farmers and a more sustainable agribusiness.
- ✓ ***Sustainable agriculture contributes to the protection of natural resources and the environment*** – conventional agricultural practices can lead to deterioration of soil fertility, soil erosion, water pollution and depletion of natural resources. By implementing sustainable practices such as water conservation and building sustainable irrigation systems, farmers can help preserve these resources for future generations.
- ✓ ***Sustainable practices can improve health and food safety*** – the application of chemical pesticides and fertilizers pollutes the soil and thereby the food products that the population consumes. Sustainable practices avoid the use of dangerous fertilizers and pesticides and use mainly natural methods to control pests and improve soil fertility, resulting in the production of safer and healthier food for the public.
- ✓ ***Sustainable agriculture can help farmers adapt to climate change*** – climate change challenges have a significant impact on agriculture, thereby threatening crop yields. Sustainable agricultural practices can help farmers adapt to climate change, improving their resilience.
- ✓ ***Sustainable farming practices can benefit local communities and the economy*** – sustainable farming practices can create jobs in the local community. Farmers applying sustainable agriculture can help improve livelihoods in rural areas and at the same time stimulate the development of the local economy on a regional and national scale.

In conclusion, we can summarize that the adoption and implementation of sustainable agricultural practices by farmers is essential for the future of agriculture. All environmentally friendly practices provide a range of diverse environmental, social and economic benefits necessary to minimize negative impacts on the environment. It is important to protect and conserve natural resources, which contribute to providing the population with healthy and safe food products. The new CAP lays the foundation for fairer and more sustainable agricultural farming models. Undoubtedly, the application of sustainable agricultural practices is one of the possibilities to achieve long-term sustainability of agriculture and contribute to stimulating the development of the rural economy on a regional, national and global scale.

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