INNOVATIVE APPROACHES TO SUSTAINABLE AND RESPONSIBLE FARM MANAGEMENT

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1 INTRODUCTION

Sustainable and responsible farm management in the context of globally changing conditions presents a complex challenge, determined by a set of factors including climate change, the rapid development of technological innovations, pressure to protect natural resources and increasing demands to ensure long-term socio-economic stability. These determinants affect not only production capacities but also the strategic flexibility and adaptability of agricultural actors in an increasingly interconnected and volatile global environment.

2 MATERIAL AND METHODS

Tackling global challenges requires the introduction of innovative approaches to business management based on quality sustainable planning, continuous learning, knowledge transfer and the ability to implement technological innovations with sustainability principles in mind. A prerequisite for successful adaptation is the application of a multidisciplinary approach that synergistically links the socio-economic, environmental and technological aspects of corporate activity. Measures that can make a significant contribution to increasing sustainability and responsible farm management include the introduction of circular economy principles, digitalisation and precision farming, the promotion of biodiversity and agroforestry, energy efficiency and the use of renewable energy sources, responsible workforce management and support for rural communities, and increasing resilience to climate change. The primary objective of the scientific paper is to identify current global challenges and trends in the sustainability of the agricultural sector. Only new approaches and management tools can lead to food production, strengthening food self-sufficiency, improving production quality as well as increasing competitiveness in the agricultural sector. In order to fulfil the set objective, materials from databases were used to find out the current situation in Slovak agricultural enterprises.

3 RESULTS

Over the past century, enormous progress has been made in improving human well-being. Societies have been radically transformed by technological advances, rapid urbanisation and innovations in production systems. Food security, poverty and the long-term sustainability of food and agricultural systems are affected by a number of global trends. The world population is expected to grow to over 9 billion by 2050, increasing demand for agriculture

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by at least 50% compared to today. Income growth in low- and middle-income countries would accelerate a dietary shift towards higher consumption of meat, fruits and vegetables compared to cereals, requiring commensurate changes in production and increasing pressure on natural resources. These trends present a series of challenges for world agriculture and food production. High-input, resource-intensive agricultural systems, which have caused massive deforestation, water scarcity, soil depletion and high levels of greenhouse gas emissions, cannot ensure sustainable agricultural production. Innovative systems are needed that protect and improve the natural resource base while increasing productivity. There is a need for a transformation process towards holistic approaches such as agroecology, agroforestry, climate-smart agriculture and resilient agriculture, which are also based on indigenous and traditional concepts. Technological improvements along with drastic reductions in fossil fuel consumption across the economy and agriculture would help address climate change and the intensification of natural hazards that affect all ecosystems and all aspects of human life. Greater international cooperation is needed to prevent new transboundary threats to agriculture and the food system, such as pests and diseases.

4 CONCLUSIONS

The world‘s agriculture and food industries face a complex set of environmental, geopolitical, technological, economic and demographic-social challenges that fundamentally affect their future development. By 2050, there will be a need to provide sufficient food for nearly 9.8 billion of the planet‘s population, which puts enormous pressure on food production to increase by around 65% compared to the current situation. Demographic trends point not only to population growth but also to increasing urbanization, rising living standards and an aging population. These trends, although not new, are fundamentally changing consumer behaviour. Higher incomes, especially in urban areas, are leading to a change in consumer preferences - there is a growing demand for fast food, convenience food, street food and fast-food outlets, which save time but often require more labour and resources to process. Slovak agricultural and food processing enterprises are not without major challenges. In the coming period, they will have to face pressure to increase the protection of natural resources, promote biodiversity and significantly reduce the negative impacts of agriculture on climate change. Food producers are therefore rightly expected to implement sustainable production methods and technological practices that will not only ensure a sufficient supply of quality food but also contribute to environmental protection for future generations.

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