

Analysis of sustainable dairy farming practices in the EU and foreign countries

Jolita Greblikaitė, Judita Astrovienė, Neringa Gerulaitienė, Rolandas Rakštys

Vytautas Magnus University; Kaunas University of Technology

Introduction

To reduce the environmental impact of the dairy sector and ensure the implementation of sustainable development goals, it is necessary to consider the requirements of sustainable farming and select the best methods for implementing sustainable dairy farming (Agostinho et al., 2019). Thus, this article aims to analyse the concept of a sustainable dairy farm and review sustainable dairy farming experience in EU countries and non-EU countries. Theoretical aspects of sustainable farming are analysed during the research; namely, the analysis of EU legal, strategic and other documents is performed; an overview of research, EU reports, and other documents on sustainable farming is conducted as well as an analysis of international experience in assessing sustainable farming systems in the dairy farm is carried out. The most targeted countries leading the dairy industry and their experience are dealt with. Experience of the USA, New Zealand, China, and EU countries (the Netherlands, Finland, Poland) in implementing sustainability principles in dairy farms is viewed.

The study revealed that the leading dairy countries pay a lot of attention to implementing sustainability principles in introducing the planned EU strategies and recommendations and being willing to operate competitively in the global market. At the same time, agriculture is aimed to be viewed as an attractive sector for work and to be adjusted to the development of common sustainability strategies of the countries. EU countries are also focusing on research, modernization, and sustainability of the dairy sector.

Methodology

The theoretical part of the paper deals with scientific literature, EU strategic, legal documents, reports and programs, and other documents related to the aspects of sustainable farming such as characteristics of sustainable farming systems, components of sustainable farming, sustainability dimensions.

The comparative analysis of sustainable dairy farms in the EU and non-European countries was carried out in the empirical section. The leading countries in the dairy sector has been selected to assess the EU's experience in sustainable dairy farming: the Netherlands and Poland as one of the largest milk producers and Finland as one of the countries with the highest milk yields. Moreover, New Zealand, the USA, China were investigated to assess sustainable farming experience in non-European countries. These three non-European countries were selected as the largest marketers of milk.

Research methods include in-depth analysis of scientific literature, document analysis, statistical data analysis, comparative analysis and synthesis, and analysis.

Results

International experience analysed in assessing sustainable farming systems in dairy farms in the USA, New Zealand, China, Poland, Finland, the Netherlands has revealed that both leading dairy countries focus on sustainability research and implementation, and those that want to become more competitive, such as China, already implement the principles of sustainability, recognizing that traditional principles are not sufficient to strengthen the sector (Bittante et al., 2015; Poteko et al., 2019; Balaine et al., 2020; Bankuti et al., 2020; Kebreab et al., 2019).

EU countries pay a lot of attention to the implementation of sustainability in accordance with the legal acts of the EU institutions, country strategies, while realizing that sustainable long-term solutions on farms ensure not only farm stability but also growth, innovative solutions not only related to climate change but integrated farm management solutions (Fogarassy et al., 2016; Lappe and Thorne, 2018; Prazan et al., 2019; Peeters, 2018; Ilyas et al., 2019).

Table 1. Examples of sustainable farm systems

Location	Farm condition	Number of cows	Area	Milking	Additional information
Lithuania, Kėdainiai	Modernized	580	Kept on litter in the barn	2 smart robots can monitor cow condition	Yield of 5.7 thousand tonnes of milk
Italy, Verona	Modernized	180	140 ha	4 robots	37 kg per cow a day
Netherlands	Equipped with natural lighting, ventilation system	130	30 ha of pasture and 15 ha of additional area	Automatic system, from milking to bottling	Diet with non-traditional components, a cow produces 43 thousand kg of milk during their life

In the development of sustainable dairy farming, it is important to integrate scientific knowledge and the resulting technical and technological solutions, improve animal welfare conditions, ensure *the implementation of animal welfare, health, and environmental requirements*, while achieving economic efficiency in an integrated way.

Main conclusions

An analysis of the EU's strategic, legal, and other documents related to sustainability has revealed that a significant number of documents have been issued on sustainable development, covering three main areas: economic, social, and environmental. A review of research, EU reports, and other documents has revealed that there is a strong focus in the scientific literature on research into a sustainable dairy system. It is found that, although there is no uniform definition of a sustainable dairy system, scientists agree that a sustainable farming system must consider not only efficiency but also social and environmental justice to achieve maximum results.

Moreover, the research revealed that the analysed European and non-European countries pay a lot of attention to the implementation of sustainability following legislation, country strategies while realizing that sustainable long-term solutions on farms ensure farm stability and farm growth, innovative solutions not only climate change but integrated solutions farm management as well.