

The Changes in Meadow and Natural Pasture Areas in Kaunas And Vilnius Counties

Giedrė Ivavičiūtė*

*Klaipėdos valstybinė kolegija / Higher Education Institution, Faculty of Technologies,
Department of Environmental and Civil Engineering, Bijūnų g. 10, Klaipėda,
Vytautas Magnus University, Faculty of Engineering, Department of Land Use Planning and
Geomatics, phone no. +37037752372,
Lietuvos inžinerijos kolegija | Higher Education Institution, Faculty of Environmental
Engineering, Department of Real Estate Cadastre, phone no. +37060089401,
e-mail: ivavice@gmail.com*

(Received in January, 2026; Accepted in January, 2026; Available Online from 8th of May, 2026)

Abstract

The objective of this study was to analyse the transformation of meadows and natural pasture areas in Vilnius and Kaunas counties between 2004 and 2024.

The article was prepared using a range of scientific methods, including statistical data analysis, analytical assessment, comparative analysis, and graphical representation. Analytical and logical analysis was applied to identify the factors contributing to the decline in meadows and natural pasture areas in both counties. To achieve the research objective, a comparative method was used to assess changes in these areas at the municipal level over the period 2004–2024, based on data from the Land Fund of the Republic of Lithuania covering two decades.

In 2024, meadows and natural pasture areas in Vilnius County covered 63,018.32 hectares, accounting for 6.48% of the county's total area. In Kaunas County, these areas amounted to 33,527.58 hectares, representing 4.15% of the county's territory.

Over the 20-year period, meadows and natural pasture areas in Vilnius County decreased by 7,451.61 hectares, corresponding to a decline of 10.57%. Similarly, in Kaunas County, these areas decreased by 8,757.72 hectares, representing a reduction of 20.71%.

The decline in meadows and natural pasture areas in Vilnius and Kaunas counties can be attributed to factors such as urbanisation, agricultural intensification, and changes in land use.

Key words: *Meadows and natural pasture, area change, causes of area change*

Anotacija

Šio darbo tikslas – atlikti pievų ir natūralių ganyklų plotų kaitos analizę Vilniaus ir Kauno apskrityse 2004–2024m.

Straipsnis parengtas taikant įvairius mokslinius metodus: statistinių duomenų analizę, analitinį vertinimą, lyginamąją analizę ir grafinį duomenų vaizdavimą. Analitinė ir loginė analizė buvo taikoma siekiant nustatyti veiksnius, lemiančius pievų ir natūralių ganyklų plotų mažėjimą abiejose apskrityse. Tyrimo tikslui pasiekti, taikytas lyginamasis metodas, kuriuo, remiantis Lietuvos Respublikos žemės fondo dviejų dešimtmečių duomenimis, buvo įvertinti šių plotų pokyčiai savivaldybių lygmeniu 2004–2024 metų laikotarpiu.

2024 m. Vilniaus apskrityje pievų ir natūralių ganyklų plotas užėmė 63018,32 ha, tai sudarė 6,48 % viso apskrities ploto. Kauno apskrityje šių teritorijų plotas siekė 33527,58 ha, t. y. 4,15 % apskrities teritorijos.

Per 20 metų laikotarpį pievų ir natūralių ganyklų plotai Vilniaus apskrityje sumažėjo 7451,61 ha arba 10,57 %. Kauno apskrityje šie plotai sumažėjo 8757,72 ha, tai sudarė 20,71 % sumažėjimą. Pievų ir natūralių ganyklų plotų mažėjimą Vilniaus ir Kauno apskrityse lėmė tokie veiksniai kaip urbanizacija, žemės ūkio intensyvinimas ir žemės naudojimo paskirties pokyčiai.

Reikšminiai žodžiai: *pievos ir natūralios ganyklos, plotų kaita, plotų kaitos priežastys.*

Introduction

Changes in meadow and natural pasture areas are highly relevant from environmental, agricultural, economic, and social perspectives. Monitoring these changes is essential for biodiversity conservation, the provision of ecosystem services, agricultural sustainability, climate change mitigation, water resource management, cultural heritage preservation, recreation, and evidence-based policy development. Understanding and addressing transformations in meadow and pasture ecosystems are therefore crucial for promoting sustainable development and safeguarding both ecosystem integrity and human well-being.



The sustainable management of grasslands occupies a central place in land-use policy due to their multifunctional role. Meadows not only provide agricultural products but also contribute to biodiversity conservation, soil and water protection, recreational opportunities, and increased resilience to environmental change (Saastamoinen, Herzon, *et al.*, 2017).

Meadows constitute a substantial component of the Earth's ecosystems, covering approximately 37% of the global land area and 69% of agricultural land worldwide (Bardgett, Manning, *et al.*, 2021). They play a critical role in ensuring food security by supplying the majority of energy and protein required for ruminants used in meat and dairy production. In addition, grasslands are increasingly recognized for their importance in climate change mitigation, particularly through carbon storage and sequestration, as well as their role in maintaining biodiversity (Sevov, Yancheva, *et al.*, 2017).

Meadows are among the most valuable ecosystems, providing a wide range of ecosystem services, including soil and water conservation, food production, and climate regulation (Xu, Li *et al.*, 2022). Pasture-meadow ecosystems represent an especially important natural asset, with growing recognition of their biodiversity value, particularly in arid and semi-arid regions. Preserving these ecosystems is essential for maintaining species richness and ecological balance.

Pasture and meadow areas are characterized by a high diversity of plant and animal species and serve as important reservoirs of genetic resources. They provide habitats for numerous species threatened with extinction and contain plant species with significant potential as genetic resources for crop breeding and agricultural development (Özyğit, 2018).

Meadow and pasture ecosystems also play a vital role in delivering ecosystem services such as biodiversity conservation, flood regulation, erosion control, and climate regulation. Depending on management practices and environmental conditions, these ecosystems may function as either carbon sinks or carbon sources, highlighting the importance of appropriate land-use management (Kirova, Zhiyanski, 2019).

In addition, meadows support diverse wildlife communities, including pollinators and ground-nesting birds. They contribute to carbon sequestration, act as natural fire barriers, and provide cultural, aesthetic, and recreational benefits (Pope, Cummings, 2023). Meadows and pastures also enhance landscape resilience to extreme weather events and enable long-term carbon storage in soils.

Despite their ecological importance, many valuable grassland ecosystems have been converted into urban areas, intensive agricultural land, or forests, or have suffered significant declines in species diversity due to intensive land use (Bioökonomie.de, 2021). Research indicates that traditional meadows host the majority of indigenous species, whereas fertilized and intensively managed grasslands contribute only marginally to regional biodiversity (Myklestad, Sætersdal, 2004).

Semi-natural meadows and pastures, which have not been fertilized and have a long history of traditional, low-input grazing, are particularly rich in species diversity. However, agricultural modernization has led to the widespread loss of these habitats over the past century, posing a serious threat to farmland biodiversity. These semi-natural grasslands typically exhibit lower productivity, which further increases their vulnerability under modern agricultural systems (Envall, Bengtsson, *et al.*, 2021).

The object of this study is the meadows and natural pastures of Kaunas and Vilnius counties.

The aim of this study is to analyze changes in the areas of meadows and natural pastures in Vilnius and Kaunas counties over the period 2004–2024.

Tasks of the investigation:

1. To analyze the current state of meadow and natural pasture areas in Vilnius and Kaunas counties.



2. To investigate the changes in meadow and natural pasture areas in Vilnius and Kaunas counties over the period 2004–2024.
3. To examine the changes in meadow and natural pasture areas within the municipalities of these counties.

Research Methodology

Various methods, including comparative, analytical, statistical, and logical analyses, were employed in this investigation.

To achieve the research objectives regarding changes in meadow and natural pasture areas in Vilnius and Kaunas counties from 2004 to 2024, comprehensive data from the Land Fund Statistics of the Republic of Lithuania (Nacionalinė ..., 2004–2024) were collected and processed. Vilnius and Kaunas counties were selected for several reasons. Both counties experience significant pressure from urban development, making meadows and pastures particularly vulnerable to human activities. Each county includes a variety of municipalities, where the distribution of meadow and pasture areas is uneven, allowing for comparisons both between municipalities and between the two counties. Vilnius and Kaunas illustrate the impact of major urban centers on land use, as well as the conditions in suburban and smaller municipalities, making the findings applicable to a broader territorial context in Lithuania.

The data were organized, analyzed, and visually represented in figures, charts, and tables to clearly illustrate spatial and temporal trends.

The current state of meadows and natural pastures in Vilnius and Kaunas counties was analyzed through a combination of quantitative and qualitative approaches. Quantitative analysis involved calculating the total area in hectares and its proportion of the county territory, as well as assessing changes in these values over the 20-year period. Qualitative analysis included the assessment of potential causes of transformation. The analysis reveals the ecological significance of meadows and natural pastures, as well as the unevenness of their spatial distribution.

The study includes an analysis of changes in meadow and natural pasture areas in Vilnius and Kaunas counties, as well as within their respective municipalities, over the 20-year period from 2004 to 2024.

Statistical and logical methods were applied to organize and interpret the data, calculate percentage changes, and identify significant trends over time. Analytical and logical analyses were further used to investigate the factors contributing to the decrease in meadow and natural pasture areas in both counties.

The Results of the Study and Their Discussion

The condition of meadow and natural pasture areas in Vilnius and Kaunas counties. Meadows comprise areas covered with perennial grasses and can be either cultivated meadows—developed on peaty soils through a series of drainage and agrotechnical interventions—or naturally occurring areas, such as flooded and dry meadows, which are regularly or potentially mowed. Natural pastures consist of areas covered with naturally occurring perennial forage grasses suitable for grazing animals.

Meadows and natural pastures may undergo peat formation processes, resulting in peat meadows and pastures. They may also include bushes, solitary trees, or stones, making them bushy or stony meadows and pastures. If shrubs and trees cover more than 70 percent of an area due to overgrowth, such areas are classified as marshes (when meadows or natural pastures are overgrown) or wooded areas (when shrubs overgrow meadows or natural pastures) (Nacionalinė žemės..., 2024).

In 2024, meadows and natural pastures in Vilnius County covered 63,018.32 hectares, accounting for 6.48 percent of the county's total area. There are eight municipalities in Vilnius



County, where meadows and natural pastures are unevenly distributed. So, the distribution of these areas is uneven across municipalities in both counties, reflecting differences in urbanization pressure, agricultural practices.

An analysis of meadow and natural pasture areas within Vilnius County municipalities shows that the largest areas are found in the Vilnius (20,701.57 hectares) and Trakai (9,678.57 hectares) districts, while the smallest area is in the Vilnius city municipality (3,417.26 hectares).

When examining the proportion of meadow and natural pasture areas relative to the total area of municipalities, it is evident that the largest share is in the Elektrėnai municipality (12.13 percent), whereas the smallest share is in the Šalčininkai district (3.45 percent) (Table 1).

Table 1. Meadows and natural pastures area in hectares and percent in municipalities of Vilnius county in 2024
1 lentelė. Vilniaus apskrities savivaldybių pievų ir natūralių ganyklų plotai hektarais ir procentais, 2024 m.

Municipalities of Vilnius county	Meadows and natural pastures area in hectares	Meadows and natural pastures area in percent
Elektrėnai	6,168.38	12.13
Salcininkai district	5,151.19	3.45
Sirvintos district	5,348.89	5.91
Svencionys district	6,212.71	3.67
Trakai district	9,678.57	8.02
Ukmergė district	6,339.75	4.55
Vilnius	3,417.26	8.53
Vilnius district	20,701.57	9.72

Source: Compiled by authors (Nacionalinė..., 2024)

Šaltinis: sudaryta autorių (Nacionalinė..., 2024)

In 2024, meadows and natural pastures in Kaunas County covered 33,527.58 hectares, accounting for 4.15 percent of the county's total area. According to the data presented in Table 2, the largest area of meadows and natural pastures in hectares is found in the Kaišiadorys district (7,682.83 hectares), while the smallest area is in the Birštonas municipality (489.34 hectares).

When analyzing the data in terms of percentages, it is evident that the largest proportion of meadows and natural pastures relative to the municipality's total area is in the Kaunas municipality (7.42 percent) and the Kaišiadorys district (7.07 percent) (Table 2).

In 2024, meadows and natural pastures in the Republic of Lithuania covered 349,995.65 hectares, representing 5.36 percent of the country's total land area.

Table 2. Meadows and natural pastures area in hectares and percent in municipalities of Kaunas county in 2024
2 lentelė. Kauno apskrities savivaldybių pievų ir natūralių ganyklų plotai hektarais ir procentais, 2024 m.

Municipalities of Kaunas county	Meadows and natural pastures area in hectares	Meadows and natural pastures area in percent
Birštonas	489.34	4.02
Jonava district	3,544.52	3.76
Kaišiadorys district	7,682.83	7.07
Kaunas	1,164.42	7.42
Kaunas district	6,256.13	4.18
Kedainiai district	3,832.08	2.29
Prienai district	5,288.50	5.12
Raseiniai district	5,269.76	3.35

Source: Compiled by authors (Nacionalinė..., 2024)

Šaltinis: sudaryta autorių (Nacionalinė..., 2024)



An analysis of the current state of meadow and natural pasture areas in Vilnius and Kaunas counties shows that in Vilnius County, these areas constitute 6.48 percent of the county's territory, which is 1.12 percent higher than the national average of 5.36 percent. In four municipalities of Vilnius County, the area of meadows and natural pastures exceeds the national average, while in the remaining municipalities, it falls below.

In contrast, meadows and pastures in Kaunas County account for only 4.15 percent of the county's total area, which is 1.21 percent lower than the national average. In Kaunas County, only two municipalities surpass the national average, while in the other six, meadows and natural pastures constitute a smaller share than the national average.

Changes in the area of meadows and natural pastures in Vilnius and Kaunas counties. This paper examines changes in the extent of meadows and natural pasture areas over a 20-year period.

In Vilnius County, the area covered by meadows and natural pastures in 2004 was 70,469.93 hectares, representing 7.24 percent of the county's total area. Between 2004 and 2024, this area decreased by 7,451.61 hectares, corresponding to a decline of 10.57 percent (Fig. 1).

In 2004, Kaunas County had 42,285.30 hectares of land covered by meadows and natural pastures, accounting for 5.23 percent of the county's total area. Over the same 20-year period, this area decreased by 8,757.72 hectares, representing a reduction of 20.71 percent.

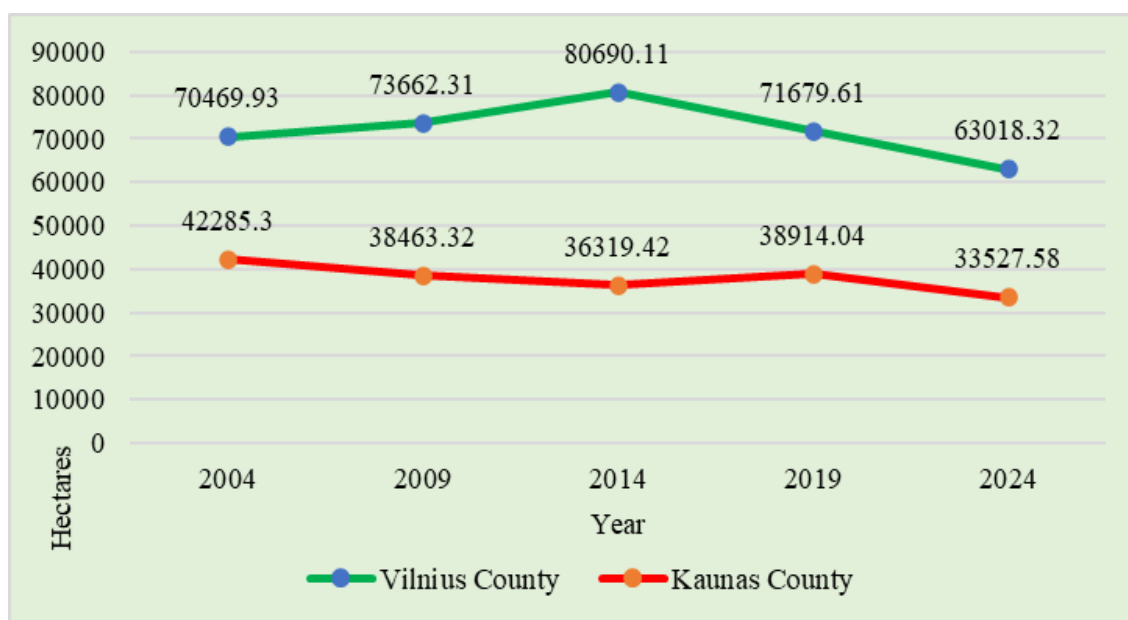


Fig. 1. Meadows and natural pasture area change in hectares in Vilnius and Kaunas counties in 2004–2024

1 pav. Vilniaus ir Kauno apskričių pievų ir natūralių ganyklų plotų kaita hektarais 2004–2024 m.

Source: Compiled by authors (Nacionalinė..., 2004–2024)

Šaltinis: sudaryta autorių (Nacionalinė..., 2004–2024)

The following section presents an analysis of changes in meadow and natural pasture areas within the municipalities of Vilnius and Kaunas.

The data indicate that in Vilnius County, the area of meadows and natural pastures increased in four of the eight municipalities, while it decreased in the remaining four (Fig. 2).

The largest increase in meadow and natural pasture areas between 2004 and 2024 was observed in Vilnius municipality (2,192.52 hectares, or 179.02 percent) and Trakai district (2,308.69 hectares, or 31.33 percent) (Table 3).



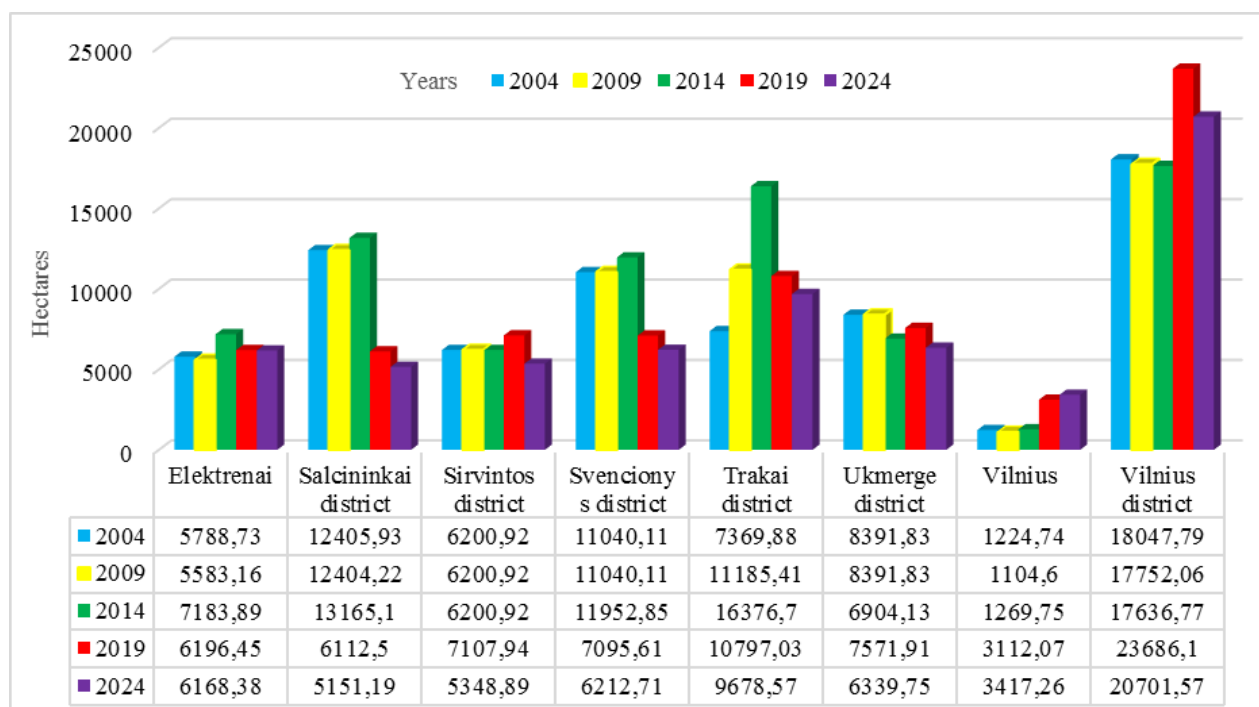


Fig. 2. Meadows and natural pasture area change in hectares in municipalities of Vilnius county in 2004-2024
2 pav. Vilniaus apskrities savivaldybių pievų ir natūralių ganyklų plotų kaita 2004-2024 m.

Source: Compiled by authors (Nacionalinė..., 2004-2024)

Šaltinis: sudaryta autorių (Nacionalinė..., 2004-2024)

Among the four municipalities where the area of meadows and natural pastures decreased, the most significant reduction occurred in the Šalčininkai district (7,254.74 hectares, or 58.48 percent).

Table 3. Meadows and natural pasture change in hectares and percent in municipalities of Vilnius county in 2004-2024
3 lentelė. Vilniaus apskrities savivaldybių pievų ir natūralių ganyklų plotų kaita hektarais ir procentais 2004-2024 m.

Municipalities of Vilnius county	Meadows and nature pasture area change in hectares	Meadows and nature pasture area change in percent
Elektrenai	+ 379.65	+ 6.56
Šalčininkai district	- 7,254.74	- 58.48
Sirvintos district	- 852.53	- 13.74
Svencionys district	- 4,827.40	- 43.73
Trakai district	+ 2,308.69	+ 31.33
Ukmergė district	- 2,052.08	- 24.45
Vilnius	+ 2,192.52	+ 179.02
Vilnius district	+ 2,653.78	+ 14.70

Between 2004 and 2024, the area of meadows and natural pastures increased in three of the eight municipalities in Kaunas County, while it decreased in the remaining municipalities (Fig. 3).

The data presented in Table 4 show that the largest increases in meadow and natural pasture areas in Kaunas County occurred in the Kaunas city municipality (957.76 hectares, or 463.45 percent) and the Kaunas district municipality (2,465.19 hectares, or 65.03 percent).



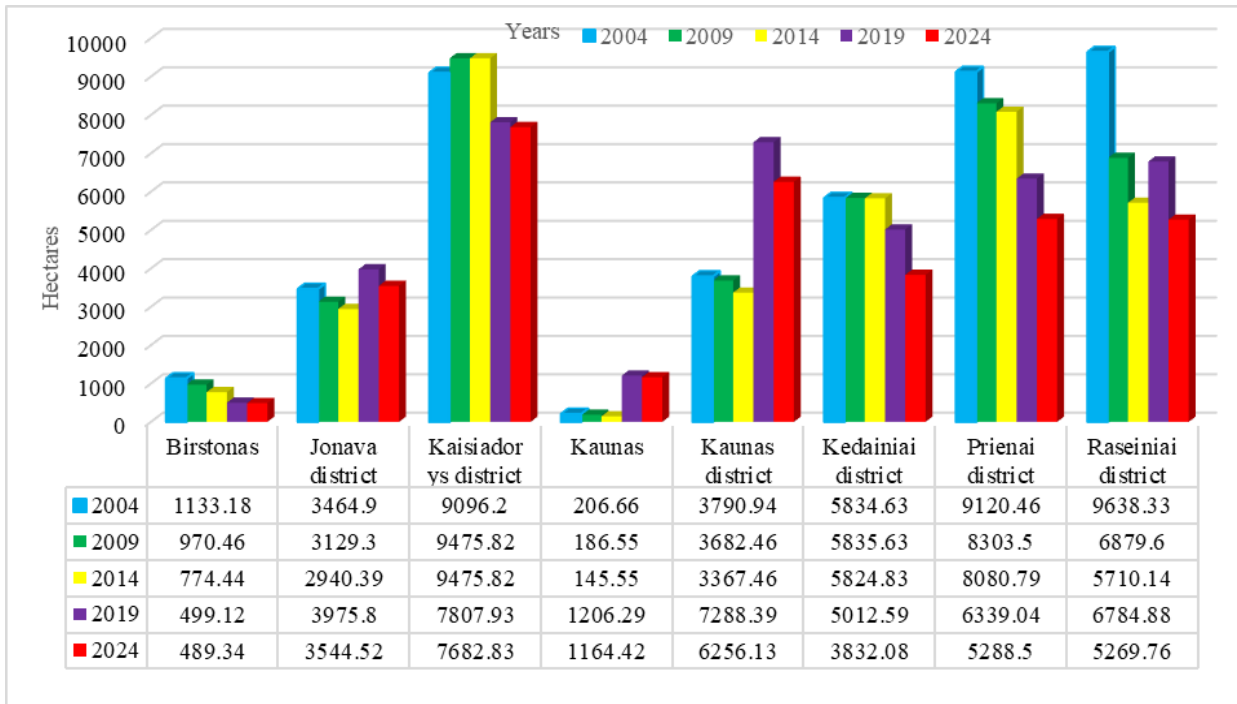


Fig. 3. Meadows and natural pasture area change in hectares in municipalities of Kaunas county in 2004-2024
3 pav. Kauno apskrities savivaldybių pievų ir natūralių ganyklų plotų kaita 2004-2024 m.

Source: Compiled by authors (Nacionalinė..., 2004–2024)

Šaltinis: sudaryta autorių (Nacionalinė..., 2004–2024)

Among the five municipalities in Kaunas County where meadow and natural pasture areas decreased, the largest losses in hectares were recorded in the Raseiniai district (4,368.57 hectares) and the Prienai district (3,831.96 hectares) (Table 4).

Table 4. Meadows and natural pasture change in hectares and percent in municipalities of Kaunas county in 2004-2024
4 lentelė. Kauno apskrities savivaldybių pievų ir natūralių ganyklų plotų kaita hektarais ir procentais 2004-2024 m.

Municipalities of Kaunas county	Meadows and nature pasture area change in hectares	Meadows and nature pasture area change in percent
Birstonas	- 643.84	- 56.82
Jonava district	+ 79.62	+2.30
Kaisiadorys district	- 1,413.37	- 15.54
Kaunas	+ 957.76	+ 463.45
Kaunas district	+ 2,465.19	+ 65.03
Kedainiai district	- 2,002.55	- 34.32
Prienai district	- 3,831.96	- 42.02
Raseiniai district	- 4,368.57	- 45.32

Changes in the areas of meadows and natural pastures in the municipalities of Vilnius and Kaunas counties reveal clear territorial differences driven by varying levels of urbanization, land-use structure, farming practices, and policy implementation.

In municipalities where meadow and natural pasture areas increased (e.g., Vilnius district, Trakai district, and Kaunas district), these changes are mainly associated with the conversion of abandoned agricultural land into natural grasslands and the implementation of landscape management and environmental protection programs. In urban areas, the expansion of green spaces, recreational zones, and urban meadows also contributed to the statistical increase in meadow areas, although their ecological characteristics often differ from those of traditional natural meadows.



By contrast, municipalities that experienced a significant decline in meadow and natural pasture areas are characterized by more intensive agricultural activity, greater expansion of arable land, and more limited application of environmental protection measures. In these areas, meadows were frequently converted into arable land or built-up territories and were further fragmented by infrastructure development.

The key difference between municipalities with increasing and decreasing meadow areas lies in the degree of urbanization pressure, the intensity of land use, and the integration of environmental priorities into spatial planning. Municipalities with higher population density and more active urban development tend to experience greater meadow loss unless compensatory or restoration measures are implemented. Conversely, in areas with slower urbanization and less intensive agricultural activity, meadows are more likely to be preserved or even expand through natural succession processes.

Moreover, participation in agri-environmental schemes, farmers' attitudes toward extensive farming, and local policy decisions play an important role. Municipalities that apply sustainable land-use principles more consistently are better able to maintain larger areas of meadows and natural pastures.

In summary, changes in meadow and natural pasture areas are not random but reflect different territorial development trajectories. Regions oriented toward intensive agriculture and urban expansion experience more rapid meadow decline, whereas areas guided by sustainable land-use practices and environmental priorities tend to maintain or increase the extent of these ecosystems.

Causes of changes in meadows and natural pastures. The analysis indicates that the areas of meadows and natural pastures in the municipalities of Vilnius and Kaunas counties have both increased and decreased over time. Meadow and natural pasture areas in Vilnius and Kaunas counties are shaped by a combination of anthropogenic and natural factors.

Several factors may contribute to the expansion of meadows and natural pasture areas:

1. Government policies or incentives aimed at conserving or restoring natural habitats, such as meadows and pastures, can facilitate their expansion.
2. Abandoned agricultural fields naturally tend to revert to meadows or pastures over time.
3. Efforts to restore degraded land or convert marginal agricultural land into meadows or pastures.
4. Protected areas or conservation initiatives often include meadows and pastures in their management strategies to maintain biodiversity and support traditional land-use practices.

Conversely, the decline of meadows and natural pastures in the municipalities of Vilnius and Kaunas counties has been influenced by several factors:

1. The expansion of urban areas can lead to the conversion of meadows and pastures into built-up land. In Kaunas County, the area of built-up land increased by 22.65% (7,582.45 ha) during the analyzed period, while in Vilnius County it increased by as much as 41.88% (14,744.87 ha).
2. Intensive agricultural practices, such as monoculture cultivation or extensive use of large machinery, contribute to habitat degradation and the loss of natural meadows and pastures.
3. Land subdivision resulting from infrastructure development or changes in land use can fragment meadows and pastures, reducing their extent and ecological functionality. For example, in Kaunas County, the area of arable land increased by 3.42% (13,716.30 ha) between 2004 and 2024.

In summary, a combination of human activities, environmental changes, and natural processes collectively drive the decline of meadows and natural pasture areas. Addressing these factors and promoting sustainable land management practices is essential for the conservation and restoration of these vital ecosystems.

Municipalities with supportive conservation policies and lower urbanization pressure tend to maintain or expand meadow areas, while areas with intensive land use or rapid urban growth see significant declines. Applying sustainable land management practices is essential to preserve



biodiversity, maintain ecosystem services, and balance urban development with environmental protection.

Sustainable land management practices for the protection of meadows and natural pastures. The protection and conservation of natural habitats should be a key priority in landscape planning. Particular attention should be given to meadows and natural pastures, especially in areas where they have high biological value. In such locations, the establishment of protected zones is essential to ensure the long-term preservation of these habitats.

Targeted land management policies also play a crucial role. Urbanization and infrastructure development in sensitive meadow areas should be restricted, while land users should be encouraged to follow land-use planning principles that support the conservation of natural vegetation and the maintenance of ecosystem functions.

Organic farming and appropriate grassland management are integral to the sustainable use of meadows. Rotational grazing helps prevent vegetation loss and soil degradation and therefore should be applied more widely. In addition, intensive fertilization and pesticide use should be reduced in order to protect biological diversity. The maintenance of semi-natural meadows is particularly important, as they preserve traditional ecosystems and high levels of species diversity.

The restoration of degraded land is equally significant. Abandoned or poorly managed areas can be successfully converted into meadows or pastures by sowing native grass and meadow plant species and restoring natural vegetation.

Effective protection of meadows and pastures is not possible without the involvement of local communities and stakeholders. Farmers, municipalities, and other institutions should be encouraged to actively participate in management programs, while training and advisory activities can strengthen knowledge of sustainable land use and the ecological value of ecosystems.

Agri-environmental schemes and financial incentives also play an important role. European Union and national subsidy programs can serve as strong motivating factors for the adoption of sustainable meadow and pasture management practices.

Finally, systematic monitoring and data collection are essential. Regular assessment of meadow and natural pasture areas, biological diversity, and degradation indicators not only allows evaluation of current conditions but also supports evidence-based planning of conservation measures and assessment of their effectiveness.

Conclusions

1. In 2024, meadows and natural pastures in Vilnius County covered 63,018.32 hectares, accounting for 6.48 percent of the county's total area. Within the county, the largest areas of meadows and natural pastures are found in the Vilnius district (20,701.57 hectares) and Trakai district (9,678.57 hectares), while the smallest area is in Vilnius city municipality (3,417.26 hectares).

2. In Kaunas County, meadows and natural pastures covered 33,527.58 hectares, representing 4.15 percent of the county's total area. The largest area is in the Kaišiadorys district (7,682.83 hectares), while the smallest is in the Birštonas municipality (489.34 hectares).

3. An analysis of the current state of meadow and natural pasture areas shows that Vilnius County (6.48 percent) exceeds the national average (5.36 percent) by 1.12 percent, whereas Kaunas County (4.15 percent) is 1.21 percent below the national average.

4. Between 2004 and 2024, the area of meadows and natural pastures in Vilnius County decreased by 7,451.61 hectares, corresponding to a decline of 10.57 percent. Among the four municipalities where these areas decreased, the most significant reduction occurred in the Šalčininkai district (7,254.74 hectares, or 58.48 percent). Conversely, the largest expansion of meadows and natural pastures during this period was observed in Trakai district (2,308.69 hectares, or 31.33 percent).



5. In Kaunas County, the area of meadows and natural pastures declined by 8,757.72 hectares, representing a 20.71 percent decrease between 2004 and 2024. Among the five municipalities experiencing reductions, the largest losses occurred in the Raseiniai district (4,368.57 hectares) and Prienai district (3,831.96 hectares). The largest expansions were recorded in Kaunas district (2,465.19 hectares, or 463.45 percent).

6. Changes in the areas of meadows and natural pastures in Vilnius and Kaunas counties reflect differing territorial development trajectories and land-use priorities. In municipalities where more sustainable land-use approaches are applied and urbanization pressure is lower, these ecosystems are preserved or even expanding. In contrast, areas dominated by intensive agriculture and urban development are experiencing a rapid decline in meadow and natural pasture areas. Consequently, the long-term conservation of these habitats depends directly on the implementation of sustainable land-use policies and effective environmental protection measures.

References

1. Bardgett, R. D., Manning, P., Morriën, E., & De Vries, F. T. (2021) Combatting global grassland degradation. *Nature Reviews Earth & Environment*, Volume 2. P. 720–735. DOI: <https://doi.org/10.1038/s43017-021-00207-2>
2. Bioekonomie.de. (2021) Ecologically valuable management of meadows and pastures. Available from Internet: (March 18, 2024). (<https://bioekonomie.de/en/news/ecologically-valuable-management-meadows-and-pastures>).
3. Envall, I., Bengtsson, J., Jakobsson, S., Rundlof, M., Aberg, CH., Lindborg, R. (2021) What is the effect of giving the grazers access to additional nutrient sources on biodiversity in semi-natural pastures? A systematic review protocol. *Environmental Evidence*. Volumes 10. DOI: <https://doi.org/10.1186/s13750-021-00230-2>
4. Özygğgt, Y. (2018) Pasture-Meadow Areas and Importance for Biological Diversity. *American Journal of Engineering Research (AJER)*, Volume 7, Issue 4. P. 189-193.
5. Kirova, L., Zhiyanski, M. (2019) Soil characteristics in pastures and meadows under different management conditions. *Research Gate*. P. 89-102.
6. Myklestad, A., Sætersdal, M. (2004) The importance of traditional meadow management techniques for conservation of vascular plant species richness in Norway. *Biological Conservation*, Volume 118, Issue 2. P. 133-139. DOI: <https://doi.org/10.1016/j.biocon.2003.07.016>
7. Nacionalinė žemės tarnyba prie Žemės ūkio ministerijos. (2024) *Lietuvos Respublikos žemės fondas*. (The National Land Service under the Ministry of Agriculture. *Land Fund of the Republic of Lithuania*). Vilnius. – 47 p. (In Lithuanian).
8. Nacionalinė žemės tarnyba prie Žemės ūkio ministerijos. (2004 - 2024) *Lietuvos Respublikos žemės fondas*. (The National Land Service under the Ministry of Agriculture. *Land Fund of the Republic of Lithuania*). Vilnius. 2004 - 2024. – 144 p. (In Lithuanian).
9. Pope, K.L., Cummings, A. K. (2023) Recovering the lost potential of meadows to help mitigate challenges facing California's forests and water supply. *California Fish and Wildlife Scientific Journal*. P. 1-22. DOI: <http://www.doi.org/10.51492/cfwj.109.3>.
10. Saastamoinen, M., Herzon, I., Särkijärvi, S., Schreurs, C., Myllymäki, M. (2017) Horse Welfare and Natural Values on Semi-Natural and Extensive Pastures in Finland: Synergies and Trade-Offs. *Land*, Volume 6(4). DOI: <https://doi.org/10.3390/land6040069>
11. Sevov, A., Yancheva, Sh., Kazakova, Y. (2017) Sustainable pasture management. *New perspectives in forage crops*. DOI: 10.5772/intechopen.72310
12. Xu, L., Li, D., Wang, D., Ye, L., Nie, Y., Fang, H., Xue, W., Bai, Ch., Ranst, E. V. (2022) Achieving the dual goals of biomass production and soil rehabilitation with sown pasture on marginal cropland: Evidence from a multi-year field experiment in Northeast Inner Mongolia. *Frontiers in plant science*, Volume 13. DOI: <https://doi.org/10.3389/fpls.2022.985864>

Pievų ir natūralių ganyklų plotų kaita Kauno ir Vilniaus apskrityse

(Gauta 2026 m. sausio mėn.; atiduota spaudai 2026 m. sausio mėn.; prieiga internete nuo 2026 m. gegužės 8 d.)

Santrauka

Straipsnyje nagrinėjama Vilniaus ir Kauno apskričių pievų ir natūralių ganyklų plotų esama padėtis bei jų pokyčiai 2004–2024 m.



2024 m. Vilniaus apskrityje pievų ir natūralių ganyklų plotas siekė 63018,32 ha arba 6,48 proc. apskrities teritorijos. Didžiausi nagrinėjami plotai 2024 m. buvo Vilniaus rajone (20701,57 ha) ir Trakų rajone (9678,57 ha), o mažiausi – Vilniaus miesto savivaldybėje (3417,26 ha). Santykinai didžiausia pievų ir ganyklų dalis apskrities savivaldybėse buvo Elektrėnų savivaldybėje (12,13 proc.), o mažiausia – Šalčininkų rajone (3,45 proc.).

Kauno apskrityje pievų ir natūralių ganyklų plotas 2024 m. siekė 33527,58 ha arba 4,15 proc. apskrities teritorijos. 2024 m. didžiausi plotai nustatyti Kaišiadorių rajone (7682,83 ha), o mažiausi – Birštono savivaldybėje (489,34 ha). Santykinai didžiausia pievų ir ganyklų dalis apskrityje yra Kauno miesto savivaldybėje (7,42 proc.) ir Kaišiadorių rajone (7,07 proc.).

Lietuvos mastu, pievų ir natūralių ganyklų plotas 2024 m. siekė 349995,65 ha arba 5,36 proc. šalies teritorijos. 2024 m. Vilniaus apskrityje pievos ir ganyklos sudarė 6,48 proc., tai yra 1,12 proc. daugiau nei šalies vidurkis, o Kauno apskrityje – 4,15 proc. arba 1,21 proc. mažiau nei šalies vidurkis.

Atlikus pievų ir natūralių ganyklų plotų kaitos analizę 2004–2024 m., nustatyta, kad 2004–2024 m. Vilniaus apskrityje pievų ir natūralių ganyklų plotas sumažėjo 7451,61 ha (10,57 proc.), didžiausias sumažėjimas fiksuotas Šalčininkų rajone (7254,74 ha arba 58,48 proc.). Analizuojamų plotų plėtra vyko Vilniaus miesto savivaldybėje (2192,52 ha arba 179,02 proc.) ir Trakų rajone (2308,69 ha arba 31,33 proc.).

Kauno apskrityje pievų ir natūralių ganyklų plotas sumažėjo 8757,72 ha (20,71 proc.), didžiausi praradimai fiksuoti Raseinių (4368,57 ha) ir Prienų (3831,96 ha), o šių plotų plėtra vyko Kauno (2465,19 ha arba 65,03 proc.) rajonuose.

