THE ADAPTABILITY OF THE GALLOWAY BREED TO ROMANIAN PASTURES: A SYSTEMATIC ANALYSIS OF ZOOTECHNICAL POTENTIAL – A REVIEW

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Abstract

In the current context of European agriculture, marked by economic pressures, increasingly stringent sustainability requirements, and the need for efficient use of agroecological resources, it is essential to select cattle breeds adapted to diverse soil and climate conditions for the sustainable development of the livestock sector. This paper analyzes the potential benefits of using the Galloway breed in extensive cattle farming systems, particularly in Romania's hilly and mountainous regions, where significant areas of natural and semi-natural pastures remain underutilized. The Galloway breed originates from southwestern Scotland and is characterized by hardiness, remarkable adaptability to harsh climatic conditions, efficiency in utilizing low-quality pastures, and docile behavior. These characteristics facilitate extensive management. Their double coat provides thermal insulation, enabling the animals to overwinter outdoors and reducing the need for technological investments. Furthermore, the breed's productive performance reflects favorable economic potential under low-input conditions. International case studies from Scotland, Canada, and Luxembourg demonstrate the use of Galloways in producing high-quality meat and in ecological conservation and restoration projects for degraded habitats through controlled grazing and invasive vegetation management. In Romania, experimental results from the Cojocna Educational Farm (USAMV Cluj-Napoca) confirm the breed's superior performance under extensive grazing conditions compared to other rustic breeds in similar systems. In conclusion, integrating the Galloway breed into extensive farms in Romania can increase the resilience of agroecosystems, sustainably utilize marginal land, and economically diversify farms in areas with low livestock-pastoral potential.

Keywords: *Galloway breed, permanent grasslands, ecological adaptability, low technological requirements, extensive grazing*

INTRODUCTION

In the current context of European agriculture and the growing need for sustainable and robust farming systems that are adapted to local conditions, selecting cattle breeds that can efficiently use pastures is essential. Romania has significant potential in terms of natural and semi-natural pastures, especially in hilly and mountainous regions. These resources can be used efficiently through extensive livestock farming; however, this requires rustic breeds that are well-adapted and have low technological requirements. The permanent grasslands in our country cover approximately 4.9 million hectares. Of this area, 68% is used as grassland for pastures, while the remaining 32% is used for the production of hay. Approximately 79% of these

grasslands (about 3.8 million hectares) are located in hilly and mountainous areas, which have significant livestock potential but are often not properly exploited (Rotar, I. and Vidican Roxana, 2003; Samuil, C. and Vîntu, V., 2012; Mocanu, V. et al. 2021; Cojocariu Luminita, 2022). At the same time, the cattle sector in Romania is experiencing a downward trend. According to data from the National Institute of Statistics (INS), there were 1,814,700 head of cattle in 2023, compared to 1,833,700 in the previous year. This reflects a modest but steady decline in interest in this species (https://insse.ro). In this context, growth strategies must be rethought to include breeds that are better adapted to current conditions and more efficient in extensive systems. In relation to this topic, the Galloway breed, which originates from the harsh regions of Scotland, is a subject that is increasingly being addressed in the specialized literature because it is considered a model of adaptability in extensive systems. This hornless breed has a compact body and a double coat that protects it from cold and moisture (Pruitt, 2004). Its ability to utilize poor-quality pastures while maintaining a constant level of productive performance makes the Galloway breed a viable alternative for restoring the hilly and mountainous regions of Romania under conditions of increasing economic and ecological pressure (https://www.gallowaybeef.co.uk).

Against this background, the aim of this paper is to review the literature on the use of the Galloway breed in extensive cattle farming systems. The focus is on the sustainable use of pastures in Romania, and the main aspects related to the productive performance, ecological impact, and economic efficiency of this breed are highlighted.

REGARDING THE GALLOWAY BREED

Origin and Selection

The Galloway breed originated in the Galloway region of southwestern Scotland and was developed before the 17th century. These cattle are polled (hornless) and adapted to harsh conditions, such as hilly terrain and a wet, cold climate. They have a dense coat with a thick outer layer and an insulating inner layer, which allows them to winter outdoors without special shelter. The evolution of native Scottish Celtic breeds, of which the Galloway is one of the oldest, was shaped by natural selection until the 19th century, when they began to mix with other breeds. Initially, color variations (black, reddish, brindled, and sometimes white spots) were common. However, selection favored the polled line with a black coat until the 19th century when other color varieties (dun and red) were also recognized in the registry.

Selection and Development

In 1862, a "Polled Herd Book" was published, including the

Galloway breed alongside the Angus breed and others. The "Galloway Cattle Society of Great Britain and Ireland" was then established between 1877 and 1878. The society began to strictly record the breed's genealogy and standards (https://www.thecattlesite.com). Initial registrations focused on black specimens, but over time, dun and red varieties were also permitted. In 1878, the Galloway breed started its own separate herd book.

The process of selection focused particularly on individuals displaying superior traits characteristic of the Galloway breed, such as:

1. rusticity and adaptability, including a dense coat, tolerance to harsh climates, and the ability to graze on marginal land;

2. natural selection for meat production, including fine marbling and a well-balanced carcass obtained directly from pasture;

3. maternal qualities and longevity: cows have easy calvings and vigorous calves, and maintain reproductive performance until 15 – 17 years of age.

4. polled and docile: the breed is naturally hornless, and the temperament is normally calm (https://www.gallowaybeef.co.uk).

The society and herd book, established in 1877–1878, have played a fundamental role in maintaining the breed's purity, promoting standards, and supporting economic growth in extensive farming systems.

Table 1

The main characteristics of the Galloway breed

Category	**Characteristics**
Origin	Southwestern Scotland - Galloway Region
Breed type	Meat (cattle specialized for meat production)
Size	Medium
Adult weight	Cows: 500–600 kg; Bulls: 800–1000 kg
Conformation	Compact, well-muscled, deep chest
Presence of horns	Polled (naturally hornless)
Coat color	Black (dominant), red, dun; Belted Galloway has a white belt across the trunk
Coat structure	Double: thick outer coat and dense (thermo-insulating)
Maternal aptitude	Strong maternal instinct, easy calving, high reproductive longevity
Average daily gain	650–700 g/day (in extensive systems)
Slaughter yield	58–60 %, with fine marbling of the meat
Adaptability	Excellent for grazing in harsh climatic conditions and on low-quality pastures
Recommended system	Extensive, semi-extensive, organic, conservative (rewilding)
Temperament	Calm

Galloway Breed for Sustainable Grazing Systems

The Galloway breed is used successfully in extensive grazing systems on multiple continents, including in cold, wet areas and in temperate climates. This is due to the breed's hardiness, excellent grazing ability, and superior meat quality. Its consistent performance under various climatic and geographical conditions makes it a viable option for integrating into grazing systems in Romania, particularly in hilly and mountainous regions.

Belted Galloway cattle in ecological conservation in Scotland — Case Study

The native Belted Galloway breed is increasingly being integrated into ecological restoration projects in Scotland due to its adaptability to extensive grazing and its ability to maintain diverse vegetation mosaics. One significant example is the landscape restoration project at Threave Estate in the Dumfries and Galloway region, which is coordinated by the National Trust for Scotland. In 2021, 14 Belted Galloway cattle were introduced to promote the natural regeneration of vegetation and develop more open and diverse semi-natural ecosystems (https:// www .nts.org.uk). Implementing GPS-assisted grazing (Nofence) enables precise management of grazing pressure, preventing overgrazing in certain areas and encouraging the return of native species (https://www.nofence.no/en). These practices have positively affected both spontaneous flora, including tall grasses, and fauna, particularly birds and pollinators (https://www.nts.org.uk). A report by NatureScot and the Scottish Land Commission confirms that grazing with Belted Galloway cattle has led to the "opening up of the floodplain" and supported "genuine natural regeneration" (https://www.thecattlesite.com).
This Scottish model shows that selecting a local, hardy, and adaptable breed, such as the Belted Galloway, and integrating it into an ecologically managed grazing system can be a valuable tool in ecological restoration strategies and the redevelopment of degraded habitats.

The Galloway Breed in Canada: performance, grazing, and conservation

The Galloway breed, including the Belted and White Galloway varieties, plays an increasingly important role in Canadian extensive animal husbandry. Farms across the provinces are integrating this breed. Their adaptability to cold climates, feed efficiency, and selective grazing behavior make them suitable for sustainable commercial farms and ecological conservation projects on marginal lands.The Galloway breed was introduced to Canada in 1853, making it one of the oldest British breeds established on the North American continent (Shrestha, J.N and Hansen, C. 1998). Renowned for its double coat with a thick outer

layer and insulating undercoat, the Galloway breed is ideal for the cold Canadian climate, eliminating the need for expensive winter shelter (Shrestha, J.N and Hansen, C. 1998).

According to tests carried out at the University of Guelph (https://lbcentre.com.au), Galloway meat is low in saturated fat and rich in omega-3 fatty acids. This meat is rated as being comparable to fish or poultry in terms of its health benefits.

Galloway grazing — extensive management in Canada

Canadian farms that use Galloway cattle typically employ an extensive rotational grazing system. In this system, animals are periodically moved between paddocks to avoid overgrazing and encourage vegetation regeneration. Due to their diverse and selective grazing behavior, Galloways can consume a wide range of plants, including tough grasses and perennial species, that more specialized breeds cannot (Cirebea, Mirela. 2020). These characteristics make Galloway cattle well-suited for restoring degraded pastures or controlling invasive vegetation in pasture. In regions of Alberta and British Columbia with marginal lands, Galloway farms maintain the ecological structure of the landscape through targeted grazing, positively impacting local biodiversity (https://www.galloway.ca).

Galloway in Europe

The Belted Galloway breed is used in many conservation grazing projects throughout Europe because it can adapt to harsh environments and graze indiscriminately.

Restoration of floodplains — Syr Valley, Luxembourg with Galloway

In the Syr Valley Reserve, Belted Galloways have been used to restore wetlands to their natural state. A study conducted from 2006 to 2009 shows that the cattle contributed to the habitat's structural development, enriched the spontaneous flora, and balanced the vegetation through "habitat development and habitat use" (Schaich et al., 2010).

Galloway in Romania

The Galloway breed has proven well-adapted to Romanian conditions and is suitable for extensive organic farms in Transylvania. It offers economic, zootechnical, and ecological advantages and is therefore recommended for utilizing marginal land and practicing sustainable farming. A study conducted at the Cojocna Educational Farm (USAMV Cluj) from 2023 to 2024 compared the Galloway breed to the Highland breed. The study showed that Galloway calves had an average daily gain (ADG) of 676.9 g/day, which was higher than the ADG of Highland calves 581.1 g/day, (Ranta Mirela and Mălinaș AnaMaria, 2024; Ranta et al., 2024). This result reflects the breed's excellent adaptability to extensive grazing with low-to-medium-quality feed and to the climate.

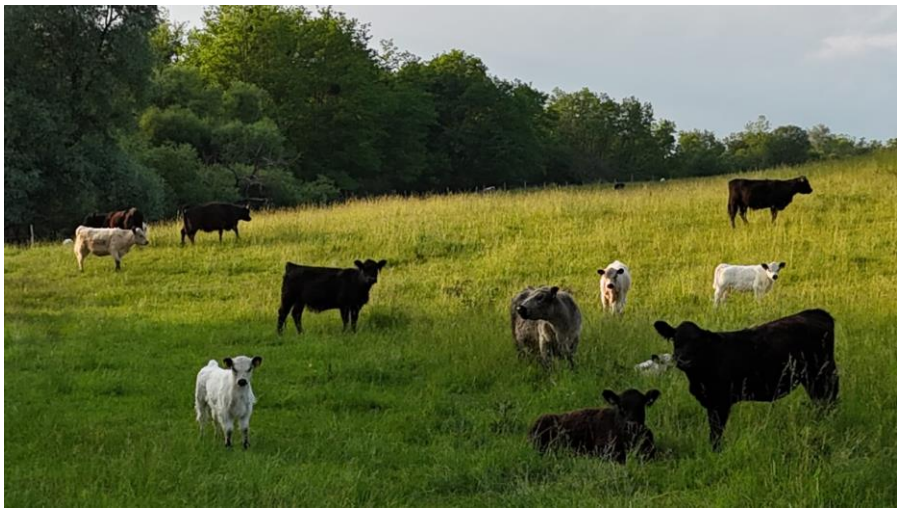

Fig. 1 Galloway on the grassland in Romania
(Source: original)

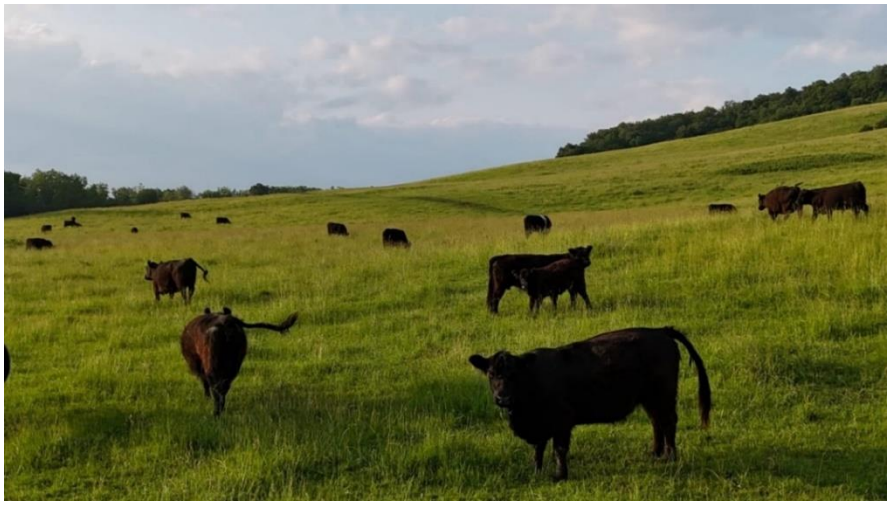

Fig. 2 Galloway grazing model in Veseud, Sibiu County
(Source: original)

CONCLUSION

The Galloway breed is a viable livestock resource for efficiently exploiting permanent pastures in Romania's mountainous and hilly regions. Due to its rusticity, adaptability to adverse environments, and minimal technological requirements, the breed is well-suited for extensive farming systems, particularly in regions with limited forage availability. Using the Galloway breed in these systems is justified by its ability to graze non-selectively, including consuming poorly palatable or invasive plant species.

Thus, the animals help maintain the compositional balance of the vegetation. Applying an optimal livestock density per hectare ensures uniform use of the land, preventing overgrazing and underutilization of certain areas. This breed's potential is especially valuable in mountain areas with abandoned or difficult-to-access pastures. Other specialized breeds cannot physiologically or behaviorally adapt to these environmental conditions or sustain viable production under extensive farming. Through constant grazing, Galloway cattle maintain, clean, and keep these lands in a functional state. This reduces the risk of vegetation invasion and supports the biodiversity specific to mountain ecosystems. At the same time, their ability to adapt to low temperatures due to their double insulating coat allows them to be raised outdoors during the cold season without specialized shelters. This significantly reduces technological costs and supports the viability of farms with limited resources. The breed's productive performance under extensive grazing conditions — evidenced by higher average daily gains than other rustic breeds — confirms its compatibility with Romanian agroecosystems.

RECOMMENDATION

There is potential to increase the use of Galloway cattle in hilly and mountainous regions of the country, particularly for the efficient use and restoration of natural pastures. Integrating this breed into maintenance plans for difficult-to-access or low-forage-value pastoral land contributes to agroecological balance, prevents habitat degradation, and maintains the characteristic floristic structure. As part of an integrated approach to biodiversity and ecosystem services in mountain areas, it is recommended that Galloway be included in agri-environmental measures, strategies to support low-input farms, and functional pasture conservation initiatives.

REFERENCES

1. Cirebea, M. (2020). Study on the growth of the Galloway breed in the pedoclimatic conditions of the Transylvanian area. Dissertation paper, USAMV Cluj-Napoca.
2. Cojocariu, L. (2022). Cultura pajiștilor și a plantelor furajere, Note de curs, partea I. Timișoara: Universitatea de Științe Agricole și Medicină Veterinară a Banatului „Regele Mihai I al României” din Timișoara.
3. Mocanu, V., Dragomir, N., Blaj, V. A., Ene, T. A., Tod, M. A., & Mocanu, V. (2021). Pajiștile României. Resurse, strategii de îmbunătățire și valorificare. Brașov: Institutul de Cercetare-Dezvoltare pentru Pajiști.
4. Pruitt, P. (2004). A Chronological History of the Galloway in America. First Edition. Bozeman, Montana: Artcraft Printers, Inc. ISBN 0-9753866-0-3.

5. Ranta, M., & Mălinaș, A. (2024). Contributions to More Sustainable and Climate-Resilient Cattle Production: Study of Performance of Galloway and Highland Breeds in Transylvania, Romania. Animals, 14(24), 3686. https://doi.org/10.3390/ani14243686.
6. Ranta, M., Păcurar, F., & Ghețe, I. (2024). The adaptation of the Galloway breed in the climatic conditions of the Cojocna Farm. Revista de Zootehnie și Medicină Veterinară, RJGFC, nr. 29, art. 9.
7. Rotar, I., & Vidican, R. (2003). Cultura pajiştilor. Cluj-Napoca: Editura Poliam. ISBN 973-99930-0-1.
8. Samuil, C., & Vîntu, V. (2012). Environmental impact and yield of permanent grasslands: an example of Romania. In Organic Farming and Food Production. InTech. https://doi.org/10.5772/52006.
9. Schaich, H., Szabó, I., & Kaphegyi, T. A. M. (2010). Grazing with Galloway cattle for floodplain restoration in the Syr Valley (Luxembourg). Journal for Nature Conservation, 18(4), 268–277. https://doi.org/10.1016/j.jnc.2009.12.001
10. Shrestha, J. N. B., & Hansen, C. (Eds.). (1997). Canada's Animal Genetic Resources: Cattle Breeds in Canada. Ottawa: Agriculture and Agri-Food Canada, Technical Bulletin 1998-2E.
11. *** Harstad, Harald. 2021. Cattle shepherded by GPS in flagship biodiversity scheme. Nofence UK Blog, 17 septembrie 2021.
12. https://www.nofence.no/en/news/cattle-shepherded-by-gps-in-flagship-biodiversity-scheme. Accessed on June 12, 2025.
13. *** Olds College (Alberta). 2008. Research confirming Galloways' great maternal & carcass attributes: feed conversion efficiency report. https://lbcentre.com.au/documents/Ga%20research%20%20confirming%20galloway%20revised%202%20june%2008.pdf. Accessed on June 11, 2025.
14. *** Canadian Galloway Association. n.d. About the breed and grazing systems in Canada.
15. https://www.galloway.ca. Accessed on June 11, 2025.
16. *** Galloway Cattle Society. (2024).
17. https://www.gallowaybeef.co.uk. Accessed on June 12, 2025.
18. *** INSSE – Institutul Național de Statistică. (2024). Bovine în exploatații agricole 2022–2023.
19. https://insse.ro. Accessed on June 12, 2025.
20. *** National Trust for Scotland. 2023a. Threave Landscape Restoration Project inspires change. National Trust for Scotland, Dumfries & Galloway.
21. https://www.nts.org.uk/stories/threave-landscape-restoration-project-inspires-change. Accessed on June 12, 2025.
22. *** National Trust for Scotland. 2021. Threave biodiversity project gets boost from HSBC UK. National Trust for Scotland, 22 septembrie

2021.https://www.nts.org.uk/stories/threave-biodiversity-project-gets-boost-from-hsbc-uk-1. Accessed on June 12, 2025.

23. *** NatureScot & Scottish Land Commission. 2022. Case studies in large-scale nature restoration and rewilding. Edinburgh: NatureScot. https://www.landcommission.gov.scot/downloads/62c5ec59e9454_Large-Scale-Nature-Restoration-Case-Studies.pdf. Accessed on June 10, 2025.

24.*** https://www.thecattlesite.com/breeds/beef/57/galloway. Accessed on June 10, 2025.

25.*** https://www.gallowaybeef.co.uk/history-heritage. Accessed on June 10, 2025.