

# RUMINANT LIVESTOCK FARMING AT THE LEAST CULTIVABLE AREAS



**«How does ruminant farming enhance  
the least arable lands and for what benefits?»**

**1**

The permanent grasslands or mountain pastures areas, often found in inaccessible zones, unsuitable for cultivation or with a difficult pedoclimatic context, are exploited by ruminants capable of using grass and scrub, thus transforming these spaces into livestock farming areas. These areas play a crucial role in the production of proteins consumable by humans, thereby reducing feed-food competition.

**2**

Ruminant livestock in areas not well-suited for cultivation, such as high-altitude areas and wetlands, contributes to the preservation of landscapes, the prevention of natural risks, and holds significant ecological and heritage value.

**3**

The recognition of the cultural value of landscapes shaped by ruminant livestock farming has led to the classification or even the labelling of numerous sites. The justifications highlight the importance of this type of livestock farming in the aesthetic creation of these landscapes, which have become major assets for territorial attractiveness.

**4**

Grasslands provide a multitude of environmental services including biodiversity preservation, carbon storage in soils, soil quality conservation, water quality maintenance and water flow management. Moreover, they play a crucial role in adaptation to and mitigation of climate change.

# RUMINANT LIVESTOCK FARMING AND THE LEAST CULTIVABLE AREAS

## WHAT ARE WE TALKING ABOUT?

1

### The valorization of grass

In France, in challenging areas, only herbivorous livestock farming has historically thrived. It occupies a significant position there, establishing itself mainly on land that is not very fertile or unsuitable for mechanization, such as slopes, wetlands and stony areas. These areas are home to vegetation that only ruminants can effectively digest, namely grass. Herbivores farming thus plays a crucial role in maintaining economic and social activity in these difficult areas, thereby contributing to the vitality of rural zones. The meadows and pastures it maintains also offer significant environmental benefits.

#### The grasslands, marginally or not cultivable, but valuable for herbivorous livestock

Areas that are always on grass, particularly permanent grasslands and pastures, are most frequently found in areas where cultivation is not possible. This may be due to a lack of accessibility, such as in the mountains, or to insufficient yields where the soils are infertile, or to a harsh climate. Ruminants can use grass and certain shrubs, and are able to graze in hard-to-reach areas. These spaces play a crucial role in the development of ruminant livestock farming, which transforms these surfaces into "edible" food sources for humans (Michaud *et al.*, 2020).

#### Ruminant livestock in areas with little or no arable lands limits the competition between food and feed

In areas that are little or not cultivable, ruminants primarily feed on plant products that are not directly consumable by humans, such as grass, crop residues and by-products from the food processing industries (Michaud *et al.*, 2020). For example, a grass-based dairy system has the capacity to generate up to twice as much human-consumable protein from milk and meat compared to what it consumes in cereals and protein crops (Laisse *et al.*, 2018). This thus limits the competition between human dietary needs and those of animals (the "feed-food" competition).



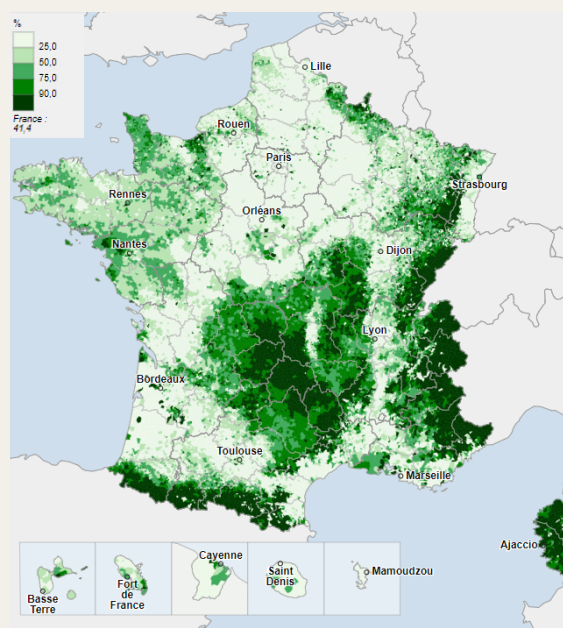
## KEY FIGURES

In France, ruminant livestock maintains **13 million ha** of grassland (Idele, 2018).

Nearly **2/3** of herbivore livestock farms are in areas considered « disadvantaged », with about **50%** located in mountainous areas (Rieutort *et al.*, 2014).  
\*Especially the mountainous regions, high mountains, foothills, as well as arid zones

Rangelands represent **more than 2.2 M ha**. **750 000 ha** of these pastures are managed by **1,400** collective structures, including 1,050 pastoralist groups. The land belongs to **more than 33,000 owners** grouped into 350 pastoral land associations (AgropastM, 2018, based on AFP 2011 and DDT 2016)

SHARE OF GRASSLAND IN THE UTILIZED AGRICULTURAL AREA (UAA) IN 2020 (AGRESTE – AGRICULTURE CENSUS 2020)



LEARN  
MORE...

...about feed-food  
competition

CHECK OUT THE SHEET ➔

« Ruminant livestock farming and  
animal feed ».



## 2

## High-altitude areas and wetlands

### Ruminant farming enhances high-altitude areas, preserves landscapes, and contributes to the prevention of natural risks

Ruminants have the ability to use high-altitude sloping areas that are difficult for tractors to access and, for the most part, not mechanizable. Some herds of herbivores are moved to the pastures to feed. We speak of "summer transhumance" when the animals move to high-altitude pastures under the guidance of their shepherd, and of "winter transhumance" when they descend to the plains to enjoy a less harsh climate. This practice allows for monitoring the grass growth to feed the herds throughout the year because the vegetation is highly variable across the seasons. The high-altitude pastures, whether collectively or privately owned, can also serve as a safety forage reserve, used for example in case of drought. Their use also allows for the freeing up of land around the farm where forage reserves are built up for the winter. The presence of ruminants contributes to the maintenance of clear spaces in the mountains, the diversification of landscapes, and the prevention of natural risks. They notably prevent from avalanches because snow holds better on short grass grazed by the herds.

In fact, the lack of maintenance of the summer pastures, due to the disappearance of livestock farming, would result in the closure of landscapes by overgrowth. In dry areas, the overgrowth and accumulation of combustible biomass increase the risk of fires. Some villages encourage the arrival of transhumants by financially assisting the farmers or shepherds so that they can preserve the state of the alpine pastures.

Furthermore, to support agricultural activity in disadvantaged areas, farmers receive a compensatory allowance for natural handicaps (ICHN). This aid, co-financed by the European Union under the second pillar of the CAP, aims to compensate for additional costs and income losses related to natural handicaps such as altitude, slope, soil, climate, etc. The amount of this aid varies according to four categories of areas, namely high mountains, mountains, foothills, and simple disadvantaged areas (Agreste, 2022), as well as on criteria of animal density. The implementation of this allowance aims to contribute to the maintenance and preservation of rural areas, ecosystems and associated landscapes.



### KEY FIGURES

**18%** of French herbivore farms use pastures (Idele, 2022)

In 2021, nearly **85,000 ICHN bénéficiaires** in metropolitan France (excluding Corsica) received **€1,055 million**, an average aid of **€12,400** per farmer (Agreste, 2022).

### Wetlands, areas of high environmental and heritage interest, valued by ruminant farming

Wet meadows represent specific ecosystems that require particular attention to optimize their agricultural use without altering their hydrographic and ecological balance. These areas cannot be cultivated; they are often used for grazing and therefore compete very little with human food.

Groves and wet meadows offer various regulatory ecosystem services by playing a crucial role in water management: they slow down surface water and also allow for its circulation and absorption by plants and soil.

The Marshes, in Poitou, Cotentin or the Culms are examples of the preservation of these territories and associated activities (tourism, hunting, fishing) thanks to the central role of ruminant farming, which contributes to the openness of landscapes and the cultural identity of these territories. The sale of meat and milk in these regions is often associated with their terroir. The nutritional and sensory quality of these grass-based products is widely recognized and sought after. Moreover, these systems require relatively few inputs and represent sanctuaries of faunal and floral biodiversity (Dumont *et al.*, 2016). Animals contribute to the establishment of species that, without their presence, would have been more heavily competed (Demarq *et al.*, 2022). These spaces are often Natura 2000 sites, natural parks, or natural reserves.



# RUMINANT LIVESTOCK FARMING AND THE LEAST CULTIVABLE AREAS

## 3 Cultural landscapes

### The contribution of ruminant livestock farming to the creation of unique cultural landscapes

The cultural value of the landscapes has led to the protection of associated areas, as evidenced by the UNESCO labelling of the Grands Causses (Causses and Cévennes, France, 2011). The justifications highlight the essential role of livestock farming in the aesthetic creation of these landscapes. This motif is found in the preservation of many other sites by UNESCO. Moreover, transhumance has also been recognized as part of UNESCO's intangible cultural heritage of humanity. National and regional classifications, such as those of Regional Natural Parks (RNP) in France, also contribute to the preservation and enhancement of landscapes related to ruminant livestock farming. Local authorities, for their part, are actively involved in the protection, preservation, and promotion of these pastoral landscapes, which are generating increasing interest within an urbanized society. These landscapes play a key role as vectors of territorial attraction, both for permanent residents and for leisure activities and tourism. (Dumont *et al.*, 2016).

#### LEARN MORE...

... about the attractiveness of rural areas

#### CHECK OUT THE SHEET ➔

« Ruminant livestock farming and rural areas ».

#### LEARN MORE...

... about the heritage role of livestock farming

#### CHECK OUT THE SHEET ➔

« Ruminant livestock farming and the traditional heritage ».



### KEY FIGURES

**460,000 ha** of pastoral landscapes are present in the **8** metropolitan national parks (Idele, 2022).

**75** categories of pastoral areas identified in the Southeast of France (Idele, 2022).

The Cévennes National Park alone is home to more than **2,400** animal species and **1,000** plant species (National Parks of France, 2012).

More than **60%** of the surface area of regional natural parks is grassland (CNE, 2015).



## 4 Environmental and climatic benefits

### The environmental benefits of grasslands induced by the presence of ruminant livestock

Although grassland territories remain sensitive to climatic hazards, and greenhouse gas emissions per unit of product may appear high (e.g., longer rearing periods), they show a good environmental balance. This is due, on the one hand, to the low animal density in these areas, and on the other hand, to the multitude of environmental services provided by the grasslands established on these non-cultivable surfaces (Dumont *et al.*, 2017). Among them, the preservation of biodiversity, carbon storage in soils, erosion control, water flow regulation (flood prevention, water storage), water management by slowing down surface water while allowing its circulation and absorption by plants and soil, as well as the filtration of mineral and organic pollutants are positive effects of livestock farming on these sites. Also, against the uncertainties of climate change, grasslands have the advantage of being usable year-round. If a summer climatic stress occurs, it can be compensated by early growth in spring and later growth in autumn or winter (Pottier *et al.*, 2007). This allows for the seizing of opportunities and the use of the meadow at different times of the year.

Moreover, the inter- and intraspecific diversity of a meadow enhances its ability to adapt to climatic hazards (Durand, 2016; Hofer *et al.*, 2016; Meilhac *et al.*, 2019). Trees and hedges are also beneficial for adapting to climate hazards, allowing for temperature moderation and providing shelter for animals, for example. They also constitute a forage resource for ruminants. At the level of the forage system, the presence of more or less productive plots is also a factor of adaptability. Low-biomass, less early-maturing grasslands may not be particularly advantageous for feeding livestock on a farm. However, their flexibility of use becomes interesting in situations of uncertainty, allowing for a delay of a few weeks in their potential exploitation (Michaud *et al.*, 2011).



### KEY FIGURES

With no grazing, the progression of wasteland would reduce the plant biodiversity of the affected areas by **4** in less than **20 years** (CNE, 2015).

Cattle farming offsets **30%** of its total greenhouse gas emissions thanks to carbon storage under its grassland and hedges (Gac *et al.*, 2010).

Average stock in the **0-30 cm** horizon under permanent grassland: **84 tC/ha** (Pellerin *et al.*, 2020).

#### LEARN MORE...

...about the environmental services of ruminant livestock

#### CHECK OUT THE SHEETS ➔

- « Ruminant livestock farming and biodiversity »,
- « Ruminant livestock farming and greenhouse gases »,
- « Ruminant livestock farming and soil quality »,
- « Ruminant livestock farming and water resources ».

# ACTIONS AND TOOLS IMPLEMENTED BY THE SECTORS



## The Pasto UMT

The Pasto UMT (Unité Mixte Technologique-Technological Mixed Unit) « Resources and transformations of pastoral livestock farming in Mediterranean territories», or UMT Pasto, is a structure of partnerships between research - INRAE, an institute of higher education - l'Institut Agro Montpellier, a technical institute - l'Institut de l'Élevage. Formed in 2015 and renewed in 2020 for 5 years, the UMT Pasto aims to:

- Produce knowledge and methods to support the maintenance and development of livestock farming;
- Facilitate consultation to promote the coordination of pastoralism stakeholders and research and development actions at both national and international levels;
- Contribute to the training of stakeholders in livestock farming and environmental management.

The UMT works on the theme of predation, which is integrated into the first work axis of the UMT, namely, the evolutions of livestock farming systems and pastoral territories in the face of local and global changes.



## ADAOPT Project

The ADAOPT project aims to support sectors under SIQO in adapting to the changing climate.

Six PDO/PGI territories are involved in the program, in order to develop strategies for adapting to climate change for their cheese sector (Camembert de Normandie, Valençay, Mont d'Or, Picodon, Tomme de Savoie and Laguiole). In each pilot territory, a multi-stakeholder working group has been established to reflect on the adaptation strategy to be implemented.



## Cap'Climat Territoires Project

The Cap'Climat Territoires project was created as part of the Cap'Climat initiative on the adaptation of the goat industry to climate change and the mitigation of its impact.

This project has three operational objectives:

- Intervene in the main goat-raising regions to raise awareness among breeders about climate change;
- Train a group of goat farmers in each goat-farming region to establish a regional dynamic;
- Co-build with these groups of breeders a goat system adapted to local climatic hazards.

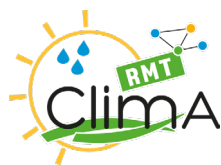


## ACLIMEL

ACLIMEL (ACLIMEL - Idele.fr) is a resource space on the anticipation and management of climatic hazards in livestock farming. Two sections make up this space:

- "Understanding" allows you to find resources on past and possible future climate changes, documentation on the consequences of climate change on livestock systems, as well as useful links;
- The "resources center" gathers tools, regional works, agroclimatic monitoring notes, and documentation on adaptation levers in the face of climatic hazards.





## ACTIONS AND TOOLS IMPLEMENTED BY THE SECTORS

### The RMT ClimA

Launched in early 2021, the ClimA Mixed Technological Network brings together a collective of experts in research, training, and development to accelerate the conduct and transfer of R&D work on the adaptation of agricultural farms to climate change. It is based on design, capitalization and provision:

- Data, indicators, tools, and models essential for developing adaptation levers;
- Impact studies at different scales, demonstrators;
- Tools for advice, educational resources and support methods. (Link to: RMT ClimA: a network of actors for the adaptation of agricultural farms to climate change).



### CLIMALAIT

Conducted between 2015 and 2019, CLIMALAIT aimed to assess the repercussions of climate change on dairy farms in France over the century, with the goal of better preparing farmers to adapt.

In collaboration with Idele, Météo France, INRA, Chambers of Agriculture, BTPL and Arvalis, CLIMALAIT conducted a detailed analysis, divided into 20 zones, to study climate changes and assess their specific impacts on medium - and long - term dairy production. Once the diagnosis was established, it was compared with field observations to collectively identify appropriate adaptation strategies for each zone. The results of this initiative are presented in the form of summary sheets, providing concrete guidance to farmers and agricultural advisors. The Cniel is now taking action to disseminate these results to the stakeholders in the industry (cniel-infos.com).



### The agricultural maintenance program in wetlands (PMAZH)

The agricultural maintenance program in wetlands, co-financed by the Artois-Picardie Water Agency in partnership with various agricultural stakeholders, including the Chamber of Agriculture, represents a crucial initiative for the preservation of wetlands and the maintenance of agricultural activities. This program is designed to address several dimensions: technical, financial, and social. To ensure the viability of livestock farming or market gardening in these areas, it is essential to propose adapted solutions that take these three aspects into account. This involves not only preserving the wet meadows but also rehabilitating their use while ensuring the economic sustainability of agricultural farms and preserving the ecological functions of wetlands, such as biodiversity and landscape.

To do this, this program offers comprehensive and fully supported technical assistance to the concerned farmers. This support includes, in particular, parasite monitoring (analyses and audits), calculation of the workshop's gross margin, individual or collective sessions on specific grass-related issues, the implementation of the Pâtur'Ajuste approach, as well as targeted actions on market gardening (Link to the Hauts-de-France Chamber of Agriculture website: Program for Maintaining Agriculture in Wetlands).

**Contacts:** juliette.ferial@idele.fr ; delphine.neumeister@idele.fr ; theo.gning@cne.asso.fr

**Redaction:** Juliette FÉRIAL (Idele). Based on the expertise of Anne-Charlotte DOCKÈS (Idele), Delphine NEUMEISTER (Idele) et Charlotte DEHAYS (Idele).

**photos credits:** Anne AUPIAIS, Anaïs L'HOTE, Maxime MAROIS, Estelle NICOLAS, Soline SCHETELAT, Denis FARADJI, Diane BUISSON, Corinne MAIGRET, Adobe Stock.

**Creation:** beta pictoris - **Layout:** Mélanie Colombel, Idele - **Reference:** 0024601030 - June 2024

## BIBLIOGRAPHY



- Agreste (2022). Environnement. Aides en zones défavorisées. GRAPH'AGRI 2022.
- AgropastoM, 2018, d'après AFP 2011 et DDT 2016. Synthèse des travaux du projet AgroPastoM. Chambres d'agriculture, ARDAR du Massif du Jura, Sidam-Copamac, Suaci Montagn'Alpes, Cerpam, Réseau pastoral AURA, 76 pages.
- CNE (2015). L'élevage rend des services à la société. Charte des bonnes pratiques d'élevage.
- Demarcq F., Couturier, C., Etienne, E., Duru, M., Morineau, J., Boitias, M., Bureau, J.C. (2022). Les prairies et l'élevage des ruminants au cœur de la transition agricole et alimentaire. Note définitive n°44. La Fabrique Ecologique.
- Dumont, B., Dupraz, P., Aubin, J., Benoit, M., Chatellier, V., *et al.* (2016). Rôles, impacts et services issus des élevages en Europe. Synthèse de l'expertise scientifique collective. auto-saisine.2016, 127 p., hal-01595470.
- Dumont, B., Ryschawy, J., Duru, M., Benoit, M., Delaby, L., Dourmad, J.Y., Méda, B., Vollet, D., Sabatier, R. (2017). Les bouquets de services, un concept clé pour raisonner l'avenir des territoires d'élevage. INRA Prod. Anim., 2017, 30 (4), 407-422
- Durand, J.L. (2016). Adaptation des prairies semées au changement climatique : amélioration génétique et intensification écologique. Rapport Métaprogramme ACCAF CLIMAGIE, INRA. 41p. <https://hal.archives-ouvertes.fr/hal-01594783/>
- Gac, A., Dollé, J.B., Le Gall, A., Klumpp, K., Tallec, T., Mousset, J., Eglin, T., Bispo, A., Peyraud, J.L., Faverdin, P ; (2010). Le stockage de carbone par les prairies. Collection l'Essentiel, Institut de l'Elevage.
- Hofer, D., Suter M., Haughey, E., Finn, J.A., Hoekstra, N.J., Buchmann, N., Luscher, A. (2016). Yield of temperate forage grassland species is either largely resistant or resilient to experimental summer drought. J. Appl. Ecol., 53, 4, 1023-34. <https://doi.org/10.1111/1365-2664.12694>
- Idele (2018). Chiffres clés de l'environnement. Rédacteurs : Foray, S. Gac. A. Chiffres clés environnement (idele.fr)
- Idele (2022). Les chiffres clés des prairies et des parcours. [idele.fr/detail-article/les-chiffres-cles-des-prairies-et-parcours-en-france](https://idele.fr/detail-article/les-chiffres-cles-des-prairies-et-parcours-en-france)
- Laisse, S., Baumont, R., Dusart, L., Gaudre, D., Rouillé, B., Benoit, M., Veyssset, P., Remond, D., Peyraud, J.L. (2018). L'efficacité nette de conversion des aliments par les animaux d'élevage : une nouvelle approche pour évaluer la contribution de l'élevage à l'alimentation humaine. In : Ressources alimentaires pour les animaux d'élevage. Baumont R. (Ed). Dossier, INRA Prod. Anim., 31, 269-288.
- Meilhac, J., Durand, J.L., Beguier, V., Litrico, I. (2019). Increasing the benefits of species diversity in multispecies temporary grasslands by increasing within-species diversity. Ann Bot., 123, 5, 891-900.
- Michaud, A., Andueza, D., Picard, F., Plantureux, S., Baumont, R. (2011). The seasonal dynamics of biomass production and herbage quality of three grasslands with contrasting functional compositions. Grass Forage Sci., 67, 64-76. <https://doi.org/10.1111/j.1365-2494.2011.00821.x>
- Michaud, A., Plantureux, S., Baumont, R., Delaby, L. (2020). Les prairies, une richesse et un support d'innovation pour des élevages de ruminants plus durables et acceptables. INRAE Prod. Anim., 2020, 33 (3), 153-172.
- Parcs nationaux de France (2012). Alpages et estives dans les parcs nationaux métropolitains de montagne. 24 pages.
- Pellerin S., Bamière L., Launay C., Martin R., Schiavo M., *et al.* (2020). Stocker du carbone dans les sols français, Quel potentiel au regard de l'objectif 4 pour 1000 et à quel coût ? Rapport scientifique de l'étude, INRA (France), 540 p. Rapport Etude 4p1000 -stocker du carbone dans les sols.pdf
- Rieutort, L., Ryschawy, J., Doreau, A., Guinot, C. (2014). Atlas de l'élevage herbivore en France. Filières innovantes, territoires vivants. Autrement. 98 pages