Technical Sheet for Solution Implementation

Optimized Management of Pastures

Thematic area: Environmental Sustainability.

Priority: How to manage grassland in the face of the future challenges?

Need: Forage production: how to limit the effects of climate change on the quality and quantity of forage?

Solution EU number: GM-2.

Content of the solution: Optimisation of pasture management for equines by adapting grazing practices to their specific behaviour. Measures such as rotational and mixed grazing, rest periods, mowing, fertilisation, and pasture renewal improve grass productivity, reduce overgrazing, and support year-round forage self-sufficiency.

Reasons for Implementing the Solution

Optimised pasture management improves forage availability, reduces feeding costs, and supports sustainable grassland use. Adapting management to equine grazing behaviour helps prevent overgrazing, maintain pasture quality, and ensure a more consistent feed supply throughout the year.

Description of Solution Strategies

Optimising pasture management aims to increase grass productivity, improve forage quality, and enhance farm self-sufficiency in feeding equines. This involves adapting grazing strategies and grassland maintenance practices to both environmental conditions and equine-specific grazing behaviour.

A key element is the transition from continuous grazing to more controlled systems such as rotational grazing. Continuous grazing with low stocking densities often leads to selective grazing, the development of rejected areas ("refusals"), and uneven pasture use, which requires additional mechanical maintenance. In contrast, rotational grazing aligns pasture use with grass growth dynamics, allowing animals to graze at optimal stages of plant development and improving overall utilisation.

Mixed grazing with other herbivores (e.g. cattle) can further improve pasture utilisation by reducing selective grazing patterns and contributing to a more even nutrient distribution. Cattle and equines do not feed in the same way when grazing. Cattle pick grass up with their tongues and are less selective, grazing more widely. They scatter their dung across the entire plot, thus distributing fertilising elements. Cattle grazing is beneficial when their numbers are not too low in relation to equines (at least 20% LU, or Livestock Units). They can graze with equines simultaneously or, in the case of rotational grazing, after them to consume the leftovers. This extends the interval between equines grazing on the same plot. Several studies have shown that mixed grazing dilutes parasite pressure through the dilution effect between the two species, which do not harbour the same gastrointestinal parasites.

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Stocking rates must be adapted to pasture productivity, season, and climatic conditions. Typical ranges vary depending on pasture quality, but stocking density should be reduced in summer or dry periods to prevent pasture degradation. Continuous presence of equines on the same pasture can lead to overgrazed patches and bare soil, promoting the spread of undesirable plant species.

Complementary practices such as alternating mowing and grazing help manage heterogeneous swards caused by selective grazing behaviour. Mowing homogenises vegetation, controls weeds before seeding, improves plant diversity, and supports pasture sustainability. It also allows better utilisation of excess grass and contributes to parasite control, as shorter swards after mowing are exposed to sunlight, reducing parasite survival. Surplus grass, particularly during peak growth periods, can be harvested as hay or silage, preferably at early growth stages to ensure high nutritional value and good regrowth potential.

Seasonal management is essential for maintaining long-term productivity. Pastures should be rested for at least two to three months during winter to allow plants to replenish their reserves and soils to recover. During this period, animals are preferably kept on designated wintering or sacrifice areas to protect the remaining pasture. Similar strategies can be applied during drought conditions to avoid overexploitation of vegetation.

Fertilisation strategies (organic or mineral) and soil management (e.g. liming) support grass growth, especially under higher stocking densities. In cases of degraded pastures, overseeding or full renovation may be necessary to restore productivity and maintain a high-quality sward.

Overall, increasing the proportion of grass in the equine diet reduces the need for concentrate feed and conserved forage, thereby lowering input costs. Efficient use of grass through grazing and mowing also limits the need for external feed inputs, enhances the value of grassland, and contributes to maintaining open landscapes while reducing land abandonment or afforestation.

Implementation Steps

1. Initial Assessment

- Analyse current pasture condition (productivity, species composition, degradation).
- Evaluate current grazing management (continuous vs. rotational, stocking rate).
- Identify key issues (overgrazing, weeds, uneven use, seasonal shortages).
- Define farm-specific goals (e.g. self-sufficiency, cost reduction, pasture restoration).

2. Grazing Management

2.1 System choice: rotational vs. continuous grazing

- Prefer rotational grazing to improve pasture utilisation and reduce waste from trampling.
- Divide pasture into 3–5 paddocks grazed successively.
- Adjust rotation length:
  - ~25–30 days (spring).
  - ~30–35 days (summer).

2.2 Grazing thresholds
- Start grazing at ~12 cm grass height.
- Stop grazing at ~3–5 cm.
- Use measurement tools (e.g. grass meter) where available.

2.3 Stocking rate adjustment
- Adapt stocking rate to season, pasture productivity, and climate.
- Reduce stocking rate or increase area during dry periods.

2.4 Avoid overgrazing
- Remove animals before critical grass height (<3–4 cm).
- Use alternative areas (e.g. sacrifice paddocks, stabilized surfaces) when needed.
- Pay special attention during drought or wet conditions.

3. Rest Periods (Winter / Drought)
- Ensure rest periods of at least 2–3 months (≈70 days).
- Avoid winter grazing on sensitive soils.
- Use designated wintering or sacrifice areas.
- Promote regrowth and soil recovery.

4. Mixed Grazing (Equines + Cattle)
- Combine species to improve pasture utilisation.
- Use cattle to graze less selective and consume leftovers.
- Maintain sufficient proportion (≥20% livestock units).
- Reduce parasite pressure through species differences.

5. Alternating Mowing and Grazing
- Use mowing to manage rejected areas and homogenise sward.
- Control weeds before seeding.
- Improve plant diversity and pasture structure.
- Reduce parasite load (sun exposure after mowing).

6. Forage Harvesting
- Harvest grass at early growth stage for higher nutritional value.
- Use surplus pasture for hay or silage production.
- Silage allows more flexible harvest windows than hay.

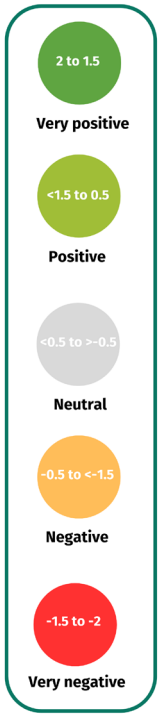
7. Fertilisation and Soil Management
- Apply organic (preferably composted) or mineral fertilisers as needed.
- Correct soil acidity (e.g. liming).
- Adapt fertilisation to grazing intensity and nutrient distribution.

8. Pasture Renewal
- Identify degraded or low-productivity areas.
- Use overseeding or full renovation where necessary.
- Address underlying causes (e.g. overgrazing, poor management).
- Adapt measures to soil and climate conditions.

Optimized Management of Pastures

How Will this Solution Impact the Performance of your Farm?

TOPIC	SCORE
Social	0.50
Economics	1.25
Welfare	1.50
Health	0.75
Environmental	0.50
Pasture access and management	2.00
Global	0.96



Traffic light explanation

Socioeconomics: This solution will improve the social performance of the farm by promoting sustainable, welfare-friendly and environmentally responsible grazing practices. This can enhance the farm's public image and social acceptability. Optimised pasture management demonstrates good stewardship of land and animals, raises awareness of biodiversity, and can improve the farm's reputation among horse owners, advisors, and the general public. While implementation requires management skills and advisory support, it can also improve work organisation, contributing to a more structured and efficient working environment.

This solution will support the economic performance of the farm because it increases forage self-sufficiency, reduces dependence on purchased feed, and improves the efficiency and productivity of grassland resources. Rotational grazing, mixed grazing and more efficient use of pasture can reduce long-term costs associated with feeding, weed control, reseeding and pasture restoration, while promoting horse health and welfare. Improved pasture productivity may also increase land value and farm capital, making this system more profitable than continuous grazing or stall-based feeding systems in the long term, provided management is adapted to local conditions and available land resources.

Health & Welfare: This solution will support the daily health performance of the farm by helping to maintain low levels of pain, mortality and drug use, by providing more natural environmental conditions in which equines can graze. When managed correctly, pastures provide optimal conditions for horses, offering access to fresh green forage and encouraging regular movement. This helps to prevent colic and

supports the development and maintenance of the musculoskeletal system, as well as promoting overall health. However, attention should be paid to periods of abundant grass growth, when the high sugar levels in rapidly growing pasture may contribute to metabolic disorders in equines.

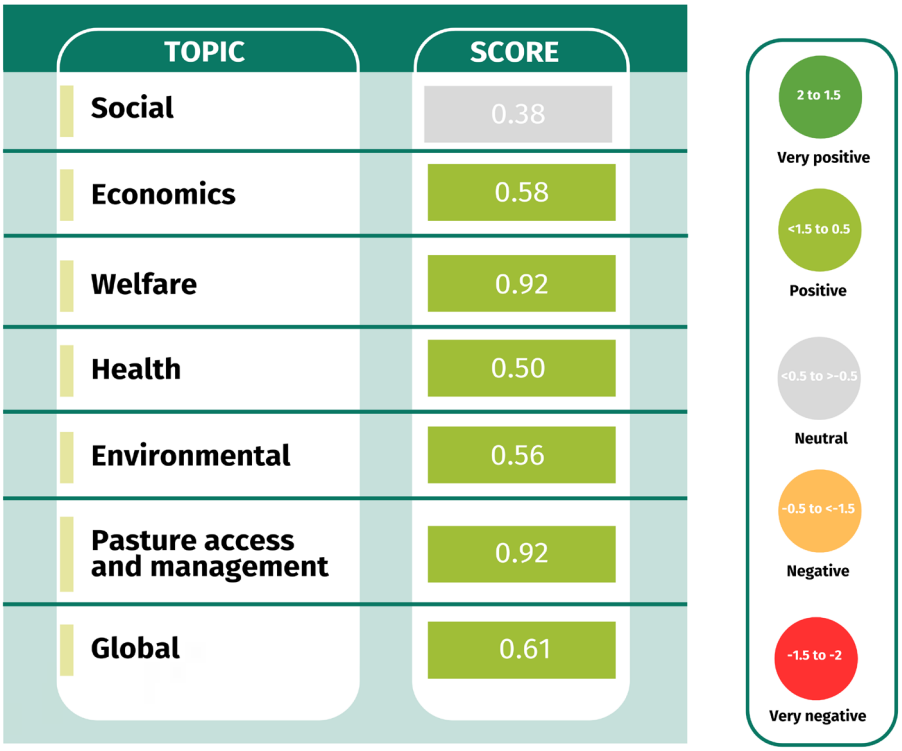
This solution will support the farm's equine welfare performance by promoting positive emotions and providing equines with welfare-friendly housing conditions. Grazing animals can express their natural foraging behaviour, interact with other animals and their environment, and move freely while grazing. This fulfils the 3Fs' aspects of welfare. Pastures provide the most suitable conditions for maintaining equine welfare, and year-round access to pasture is the optimal management system.

Environmental sustainability: This solution will support the environmental performance of the farm because rotational grazing and controlled stocking improve grassland soil protection, and biodiversity. Using multiple species of in pastures helps to halt biodiversity loss. On the other hand, mono-homogeneous pastures may reduce habitat variation and sustainable land use. It is also important to be aware of that biodiversity is also sustained in field margins.

This solution will improve the farm's land access and management performance because it increases forage self-sufficiency. Rotational grazing and controlled stocking improve grassland productivity and protect the soil. When optimising pasture management, it is crucial to consider farm-specific factors such as the number and nutritional needs of different types of equines and the different climatic and geographical conditions in different regions. Additionally, grass growth may be higher in the early season and decline later.

Optimized Management of Pastures

How Will this Solution Impact the Resilience of your Farm?



Socioeconomics: This solution will not impact the social performance of the farm facing the external challenges assessed because it mainly focuses on improving pasture productivity, forage management, and grazing organisation rather than addressing social issues directly. However, it can indirectly strengthen resilience by improving working conditions and supporting animal welfare through better forage access and freedom of movement. It can also enhance the farm's public image in a context of increasing expectations regarding welfare and the environment. Improved pasture self-sufficiency can also help to maintain stable management during crises such as inflation, pandemics or extreme weather events. Nevertheless, the extent of the benefits depends on the availability of land, labour capacity, and climatic conditions, as excessive rainfall, drought, or reduced access to grassland can disrupt grazing rotations and require the system to be reorganised.

This solution will support the economic performance of the farm facing the external challenges assessed because optimised pasture management increases forage self-sufficiency and reduces dependence on purchased feed. This makes farms more resilient to inflation, supply chain disruptions, and drought-related feed shortages. Improving pasture productivity through rotational grazing, mixed grazing and better stocking management reduces long-term maintenance and veterinary costs while stabilising profitability under changing economic and climatic conditions. However, the system's effectiveness depends on sufficient land resources and good management, as disease outbreaks, heavy rainfall, or loss of grazing area may limit its efficiency.

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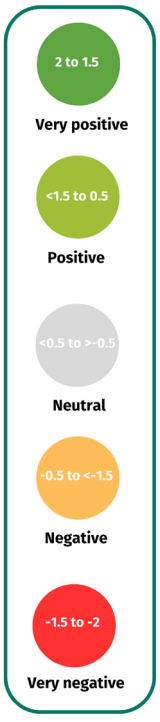
Health & Welfare: This solution will support the farm's equine health performance by reducing pain, mortality, and the need for medication when the farm is exposed to external pressures, if grasslands are managed appropriately. Well-managed grasslands not only provide horses with the most natural source of forage but also help to prevent many health problems. The farm's health performance in response to socioeconomic and environmental challenges would improve if grasslands provided an efficient basis for the nutrition and maintenance of equines. This solution has a highly positive effect on farm welfare performance. It improves housing conditions to promote positive emotional states in horses, even when the farm is under external pressure. On farms with well-managed pastures, fewer labour resources and fewer environmental concerns are required when facing socioeconomic or environmental challenges, since the animals are provided with optimal welfare conditions.

Environmental sustainability: This solution will support the environmental performance of the farm facing external challenges assessed because it increases pasture resilience through rotational grazing and recovery, improving water retention, soil health and biomass stability. This solution will support the land access or management performance of the farm facing the external challenges assessed because it maximises the productivity of the remaining land, improves efficiency and adaptive capacity in smaller areas, and increases self-sufficiency.

How can this solution help your farm to face specific external challenges to be more resilient?

CHALLENGES	SCORE
Inflation	0.79
Pandemic	0.63
High welfare standard	0.79
High infectious diseases	0.42
Extreme weather event	0.58
Loss/limited access to grassland	0.46



Optimized Management of Pastures

Inflation & Social Crises: Social challenge: This solution will support the global performance of the farm facing pandemics because improved pasture management increases forage self-sufficiency and reduces dependence on external feed supplies during crises and supply chain disruptions. Structured grazing systems also support horse welfare, stable management routines and working conditions by reducing labour linked to feed handling and stall management. In addition, maintaining active and well-managed grasslands strengthens the farm's social image by promoting sustainable and welfare-friendly practices. However, resilience remains dependent on land availability, labour capacity, and climatic conditions. Economic challenge: This solution will support the global performance of the farm facing inflation because optimised pasture management reduces the costs of purchased feed and other input by improving forage productivity and grazing efficiency. Methods such as rotational grazing and mixed grazing increase profitability, stabilise farm finances and reduce long-term maintenance and veterinary expenses. Improved grassland productivity also strengthens ecological resilience, soil quality, and biodiversity, helping farms to cope more easily with rising costs, drought, and market uncertainty.

Welfare & Diseases: Health challenge: This solution has a neutral effect on the global performance of the farm across all three areas when facing an infectious disease challenge. Socioeconomic, environmental, as well as health and welfare priorities may not be adequately maintained if the farm is confronted with a sudden outbreak of infectious disease. Managing infectious diseases requires specific measures, including the ability to isolate sick animals, appropriate equipment and materials to ensure biosecurity, and access to veterinary care and pharmaceutical products. Welfare challenge: However, this solution would significantly support the global performance of the farm when facing high-standard welfare legislation. The implementation of welfare regulations requiring high standards, including access to pastures as a fundamental aspect of equine welfare, would help ensure and strengthen the farm's global performance.

Climate Change & Access to Land: Environmental challenge: this solution will support the global performance of the farm facing abnormally hight or low temperatures, drought, excessive raining, windstorms and/or flood in many ways. During high temperatures and/or drought, equinefarm may experience reduced water availability. The implementation of adaptive pasture management practices—such as rotational grazing, controlled stocking rates, and adequate rest periods—help to mitigate overgrazing and support vegetation recovery. Maintaining sufficient soil cover and promoting diverse grassland systems enhance water retention, reduce erosion, and strengthen ecological stability under climatic stress.

Furthermore, increasing on-farm forage self-sufficiency reduces reliance on external feed inputs and improves economic resilience during periods of market volatility. These kinds of grassland management strategies contribute to sustaining soil health, preserving biomass, and maintaining biodiversity. By maintaining continuous soil cover, it reduces erosion, improves soil structure, and enhances water infiltration, which is critical after both drought and excessive rainfall events. Land access/management challenge: this solution will not impact the global performance of the farm facing loss or limited access to agricultural land because it cannot fully replace lost grazing access – It does- however maximise productivity of remaining land and improves efficiency and adaptive capacity on smaller areas.

Optimized Management of Pastures

Cost-benefit Analysis

Costs

Socioeconomics:

- Initial investment in fencing, water points, pasture subdivision, and mowing equipment.
- Possible costs for fertilisation (e.g. nitrogen and mineral amendments).
- Increased labour demand for planning, monitoring, and pasture rotations.
- Higher knowledge and training requirements for correct system management.
- Potential reliance on advisory services or external expertise.

Benefits

- Increased forage self-sufficiency reduces dependency on purchased feed.
- Lower and more stable feed-related costs.
- Improved overall farm efficiency and economic resilience.
- Reduced need for corrective interventions (e.g. reseeding, weed control).
- Better work organisation through planned grazing systems.
- Long-term investment value (e.g. infrastructure, fencing).
- Potential increase in farm value and productivity of land.

Health & Welfare:

- Not suitable for all horse types (e.g. low-need horses may require restricted access).
- Risk of undernutrition if stocking rates or rotation are mismanaged.
- Risk of parasite exposure if grazing cycles are poorly planned.
- Possible metabolic risks during periods of rapid grass growth.
- Reduced continuous free-range movement compared to unmanaged pasture systems.

- Continuous access to forage supports natural feeding and locomotion behaviour.
- Improved digestive health due to regular forage intake.
- Reduced parasite pressure through rotational and mixed grazing.
- Lower need for deworming interventions.
- More stable nutritional intake and reduced stress from degraded pastures.
- Improved overall welfare through better pasture quality and structure.

Environmental Sustainability:

- Use of mineral nitrogen fertilisers may increase environmental footprint.
- Risk of nutrient runoff and greenhouse gas emissions if mismanaged.
- Fuel use for mowing and mechanical pasture maintenance.
- Potential reduction in habitat variability in highly uniform pastures.

- Reduced overgrazing prevents soil erosion and compaction.
- Improved soil structure and water infiltration.
- Supports biodiversity through adaptive grazing management.
- Promotes carbon storage in grassland ecosystems.
- Maintains productive and resilient grassland ecosystems.

Optimized Management of Pastures

Costs

Cooperation between Farms:

- Requires coordination of grazing timing and management practices.
- Potential differences in objectives between farms (organisation challenges).
- Need for trust and agreement in shared management systems.
- Mixed grazing and shared equipment require planning and cooperation.

Benefits

- Helps prevent land abandonment and supports sustainable land use.
- Possibility of shared equipment for pasture maintenance reduces costs
- Encourages cooperation between livestock farms (e.g. mixed grazing systems)
- Strengthens local agricultural networks and knowledge exchange
- Improves efficiency through shared resources and practices
- Facilitates collective pasture and landscape management strategies

Additional Resources

Publications

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Funded by the European Union

This project has received funding from the European Union under Grant Agreement No. 101086551.

Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

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Annex

Ideas to Animate a Workshop About the Solution

- Invite agricultural advisors, grassland specialists, or livestock consultants to sponsor or support the workshop.
- Cooperate with a model farm that already optimized the pasture management.
- Organise a field-based workshop where participants actively evaluate pasture conditions and management strategies.

Proposed Structure for the Workshop on Optimized Management of Pastures in Equine Farms

1. Introduction to Optimised Pasture Management
- What is optimised pasture management?
- Why grassland management is essential in equine farming.
- Overview of key practices: rotational grazing, mixed grazing, mowing, fertilisation, pasture renewal.

2. Benefits of Optimised Pasture Management
- Improved forage self-sufficiency and reduced feed costs.
- Better organisation of grazing and farm work.
- Improved equine health through better pasture quality and natural feeding behaviour
- Environmental benefits: soil protection, biodiversity, and sustainable land use

3. Practical Applications on Equine Farms
- Designing rotational grazing systems (paddock division, rotation timing).
- Integrating mixed grazing with other livestock species.
- Managing pasture surplus through mowing or forage harvesting.
- Adjusting stocking rates based on pasture productivity and season.

4. How to Design a Suitable Pasture System
- Assessment of current pasture condition and farm objectives.
- Determining stocking density and paddock size.
- Evaluating infrastructure needs (fencing, water points, machinery).
- Planning seasonal pasture use (spring, summer, winter, drought periods).

5. Hands-On Demonstration
- Field walk: assessing pasture condition and identifying grazing pressure.
- Practicing paddock planning and rotation scheduling.
- Measuring grass height and discussing grazing thresholds.
- Demonstration of mowing or pasture maintenance techniques (if available).

6. Maintenance and Adaptive Management
- Monitoring pasture regrowth and adjusting rotation speed.
- Managing overgrazed or underused areas.
- Fertilisation and soil management basics.
- Dealing with seasonal challenges (drought, wet conditions, winter rest).

7. Case Studies and Real-World Examples
- Examples of farms using rotational or mixed grazing systems.
- Improvements in productivity, animal health, and workload.
- Lessons learned from implementation challenges.

8. Cost Analysis and Return on Investment (ROI)
- Initial investment vs. long-term savings.
- Reduction in purchased feed costs.
- Labour efficiency and infrastructure value.
- Economic resilience through improved pasture use.

9. Q&A Session
- Farm-specific questions and challenges.
- Discussion of implementation barriers.
- Exchange of participant experiences.

10. Wrap-Up and Resources
- Key takeaways from pasture management principles.
- Tools, guides, and advisory services.
- Recommendations for gradual implementation.