



Environmental enrichment for sheep



What is an enrichment?

In natural habitats, animals receive many stimuli that vary in place and time. In such habitats, they can express a wide range of behaviours that define the species' behavioural repertoire. Farming or captive environments are designed to meet biological basic needs (e.g. for rest, feeding), but are far less complex than "natural" habitats. When performed, some behaviours may procure positive emotions (e.g. play in young, control of the environment). In poor environments, animals are not able to express some of the behaviours from their repertoire and lack stimulation. As a consequence, they may be frustrated, lack positive emotions, or experience boredom.

Enriching the environment requires understanding the animals' needs and preferences, which depend on the individual and its different characteristics (e.g. species or breed, experience, developmental stage). As a starting point, a good knowledge of the species, their behaviour and biology, is essential to investigate and potentially implement relevant enrichments.

The concept of environmental enrichment refers to a wide range of modifications to the environment of captive or farmed animals that offer adequate stimulation and facilitate the expression of highly motivated behaviour thus promoting positive emotions and improving the animal's welfare. Environmental enrichments can be classified into five (non-exclusive) categories:

- **Physical enrichments** that include the complexity of the animal's enclosure and the provision of additional elements (e.g. hiding places);
- **Occupational enrichments** that promote physical and/or psychological activities by providing

opportunities to exercise or to engage in cognitive tasks;

- **Sensory enrichments**, designed to stimulate one or several senses of the animal, and include visual, auditory, olfactory, tactile and taste stimulations;
- **Feeding enrichments** that promote foraging and feeding behaviour by providing new or varied foods, or feed delivery methods or tools;
- **Relational enrichments** that embrace social contacts, development of safety feeling, social facilitation or learning in diverse situations, and specific bonds with conspecifics or individuals of other species (including humans).



Legal requirements

The EU legislation to protect farm ruminants and equines does not mention enrichment. Council Directive 98/58/EC for the protection of farmed animals nevertheless mentions ethological (behavioural) needs.

Council Directive 2010/63/EU for the protection of animals used for scientific purposes mentions enrichment, in reference to the expression of behaviour and the reduction of stress.

There is no reference to the provision of specific enrichments for sheep.



Additional considerations

Enrichment is only considered to be enriching if it is perceived as such by the animal, i.e. providing opportunities to fulfill behavioural needs and experience positive emotions and good welfare. Housing supplementations (i.e. adding a few elements to suboptimal environments) that decrease poor welfare in the short term but are not sufficient to promote good welfare are thus not considered as enrichments.

Sheep and their farming systems

For inspection recommendations, see the **Indicator Factsheet 'Environmental enrichment for ruminants and equines'**

Sheep behaviour and sensory abilities

- Sheep have a dichromatic vision (they distinguish yellow/green vs. blue/purple) and a good ability to see in low light. They can hear sounds from 125 Hz to 42 kHz. Sheep also have a developed sense of smell, a good taste perception and are sensitive to soft tactile stimulation.
- Sheep are highly social animals, living in groups of small to moderate size depending on breed. Separation from conspecifics is stressful.
- At pasture and during daylight, sheep spend around 70% of their time eating or ruminating, 20% resting, 5% walking and 5% involved in other behaviours like exploration, social interactions, drinking or self-grooming. Sheep permanently housed indoors may express a frustration at not being able to perform highly motivated behaviour such as foraging or looking for other resources.
- Sheep are grazers and like to eat a varied diet throughout the day.



Richness of sheep environment in the main European farming systems


- Sheep production is characterised by a marked heterogeneity of farm types, with extensive and semi-extensive farming being predominant in some countries and intensive farming in others.
- In extensive systems, animals are kept almost permanently outdoors at pasture and generally benefit from natural shelters.
- In semi-extensive systems, animals are kept indoors overwinter, and outdoors during the rest of the year.
- In semi-intensive systems, animals are kept indoors but have access to outdoor paddocks or pasture during the day for few months.
- In intensive farming systems, animals are kept indoors, with no or rare access to an outdoor exercise area.
- Sheep can be exposed to a spectrum of feed diversity, from highly monotonous diets (as for dairy animals or fattening lambs fed total mixed rations, low diversified fertilized pastures or highly concentrate diets with some straw), to highly diversified pastures or rangeland.

Examples of enrichments and impacts on welfare

Legend: ↗ = Increased, ↘ = Decreased, ⚠ = Attention point

Physical and occupational enrichment 	
Enrichments	Positive effects on welfare
Access to pasture	↗ exploring (foraging, free walking) ↘ aggressive behaviours, lameness, hoof disorders ⚠ insufficient feed/water/shelter/surveillance
Woodlands, shrubs, hedges	↗ social isolation (important during parturition)
Shelters (natural or artificial)	↗ rumination, grazing, protection against adverse weather ↘ heat stress
Subdivision of the pen	↗ hiding, separation from others, designated feeding areas to reduce competitive feeding ↘ social stress, aggressive behaviour
Elevated places for young	↗ climbing behaviours, resting, affiliative behaviours ↘ aggressive behaviours
Provision of objects for lambs	↗ locomotory and play behaviours ↘ non-nutritive sucking ⚠ habituation to objects (they need to be regularly changed), risk of injury
Cognitive challenges (e.g. working for food)	↗ learning opportunities ↘ boredom ⚠ frustration if not adapted (e.g. if the task is too difficult)




Sensory enrichment 	
Enrichments	Positive effects on welfare
Brushes, trees and human stroking	↗ grooming of body regions that are hard to reach, positive emotions ↘ aggressive and stereotypic behaviours
Friendly human voice ¹	↗ positive emotional state ↘ fear of people


¹ scientifically demonstrated for cattle, but not for sheep

Examples of enrichments and impacts on welfare

Legend: ↗ = Increased, ↘ = Decreased, ⚠ = Attention point

Feeding enrichment 	
Enrichments	Positive effects on welfare
Feed diversity and variety	↗ ingestion, sensory stimulation, opportunity to select appropriate feed in case of health disorders ↘ stress
Increased feed delivery frequency	↗ feeding activity, access to feed for subordinates individuals
Rolled hay (vs. baled hay)	↗ normal foraging movements, oral stimulation ↘ post-feeding wool-biting behaviour
Longer roughage	↗ feeding activity ↘ stereotypic behaviours
Sensory familiarity on new feed	↗ feed intake ↘ neophobia



Relational enrichment 	
Enrichments	Positive effects on welfare
Group housing with familiar conspecifics (adults and young) Young raised with their dam	↗ social affiliative behaviours, social learning, growth, play ↘ stress and fear ⚠ warning to group composition and stability (enough space to avoid aggression), social needs depend on the breed, negative impacts on lamb health if not well managed
Regular, predictable and positive contacts with humans (e.g. talking, feeding, stroking)	↗ positive relationship, approach towards humans ↘ avoidance of humans, stress during handling ⚠ humans should consider individual variability (animals' personality) when establishing the contact

Complexity and agency

Giving access to a variety of enrichments in place and over time (i.e. increasing the complexity of the environment and exposing animals to changing environments) while avoiding overstimulation, and allowing animals to behave as an active agent in their environment (i.e. allowing choice between items used for enrichment and control over situations) is generally highly valued by animals.

Legal requirements

Requirements listed are extracted from EU legislation at the date of publication of the present document. National legislation can be more stringent.

Council directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes

'(...)
[The principles of the Directive] include the provision of housing, food, water and care appropriate to the physiological and ethological needs of the animals, in accordance with established experience and scientific knowledge; (...)'
(Recital)

'(...)
Where an animal is continuously or regularly tethered or confined, it must be given the space appropriate to its physiological and ethological needs in accordance with established experience and scientific knowledge.'
(Annex, Paragraph 7.)

'Animals kept in buildings must not be kept either in permanent darkness or without an appropriate period of rest from artificial lighting. Where the natural light available is insufficient to meet the physiological and ethological needs of the animals, appropriate artificial lighting must be provided.'
(Annex, Paragraph 11.)

Directive 2010/63/EU of the European Parliament and of the Council of 22 September 2010 on the protection of animals used for scientific purposes

'(...)
(b) Enrichment
All animals shall be provided with space of sufficient complexity to allow expression of a wide range of normal behaviour. They shall be given a degree of control and choice over their environment to reduce stress-induced behaviour. Establishments shall have appropriate enrichment techniques in place, to extend the range of activities available to the animals and increase their coping activities including physical exercise, foraging, manipulative and cognitive activities, as appropriate to the species. Environmental enrichment in animal enclosures shall be adapted to the species and individual needs of the animals concerned. The enrichment strategies in establishments shall be regularly reviewed and updated. (...)'
(Annex III, Section A, Paragraph 3.3)



References

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