Technical Report

efsa SUPPORTING PUBLICATIONS

APPROVED: 30 June 2025
doi:10.2903/sp.efsa.2025.EN-9565

Common husbandry systems and practices for keeping beef cattle

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Abstract

This Technical report, prepared at the request of the European Commission, describes common husbandry systems and practices for keeping beef cattle in the EU. It complements the EFSA Scientific opinion on the welfare of beef cattle, which was published separately. Using data from the scientific literature and information provided by EFSA stakeholders in an EFSA's Public Call for Evidence, it identifies the beef cattle categories of interest (suckler cows, suckler calves, heifers, fattening cattle, breeding bulls, and cull dairy cows), and describes main productive cycles, housing practices, and feeding strategies. Suckler cows raise calves until weaning (at 5–11 months), primarily in systems with pasture access. Spring calving is the most common practice, though autumn and non-seasonal calving also occur. During winter, suckler herds are mainly kept in loose-housing with open straw bedded pens and fed a forage-based diet. Fully indoor and year-round pasture systems are less frequent. Fattening cattle originate from both suckler and dairy herds, are fattened for 6–15 months and are slaughtered between 12 and 30 months of age. They are usually housed indoors on slatted or solid concrete floors with bedding, though in some cases they are given access to pasture or kept in outdoor feedlots. Their diet shifts from fibre- and protein-rich feeds during the growing phase to energy-rich feeds during finishing. Breeding bulls used for natural mating are usually kept in suckler systems with pasture access, whereas bulls used for artificial insemination (AI) are housed in AI stations. Cull dairy cows, when fattened before slaughter, are typically fed either indoors or on pasture. The welfare implications of these various husbandry systems and practices are further assessed for each animal category in the EFSA Scientific opinion on the welfare of beef cattle on farms, which was published separately.

Keywords: beef cattle, animal welfare, housing, husbandry, management practices

Requestor: European Commission

Question number: EFSA-Q-2024-00127

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Acknowledgements: EFSA wishes to thank the members of the EFSA Panel on Animal Health and Welfare for their endorsement of the scientific output and the hearing expert Luc Mounier for the support provided to this scientific output. In addition, EFSA wishes to thank Barbara Padalino, Leonardo Nanni Costa, Maria Mountricha, and Martina Zappaterra for gathering information on farming practices (Department of Agricultural and Food Sciences - DISTAL, University of Bologna, under the contract GP/EFSA/ALPHA/2021/10, Lot 1); and Eléa Bailly-Caumette (under contract EOI/EFSA/2022/01 – CT 24 BIOHAW) for conducting preparatory work and drafting parts of this report. EFSA also wishes to acknowledge all the stakeholders that provided information via the Public call for evidence.

Suggested citation: EFSA (European Food Safety Authority), Cozzi G, Knierim U, Marti S, Mullan S, Ashe S, Lima E, Van der Stede Y, Vitali M, Cecchinato G, Zanna MB, D' Alessio RM, Winckler C, 2025. Common husbandry systems and practices for keeping beef cattle. EFSA supporting publication 2025: EN-9565. 77 pp. https://doi.org/10.2903/sp.efsa.2025.EN-9565

ISSN: 2397-8325

Summary

The European Commission (EC) requested the European Food Safety Authority (EFSA) to provide a Technical report on the most common husbandry systems and practices for keeping beef cattle, alongside a separate Scientific opinion on the welfare of beef cattle on farm. The present document refers to the Technical report, whereas the Scientific opinion on the welfare of beef cattle on farm was published separately (EFSA AHAW Panel, 2025).

Specifically, the request asked for a description of the most common housing practices in the EU for keeping suckler cows, calves and heifers, fattening cattle, breeding bulls, cull dairy cows and cull suckler cows. Accordingly, this report provides an overview of the EU beef cattle population and a description of beef cattle categories, followed by a detailed description of the productive cycles, main husbandry systems, housing practices, and nutrition and feeding strategies relevant for each animal category.

To provide such description, three sources of data were consulted: 1) data from relevant scientific articles collected through an extensive literature search performed in Web of Science, 2) data submitted by stakeholders through a Public Call for evidence launched by EFSA, and 3) Eurostat data, which was used to describe the beef cattle population in the EU.

In total, the EU cattle population is approximately 73 million, with an average of 22.8 million bovines slaughtered annually (years 2019-2023), encompassing both suckler and dairy herds. The main beef producers with more than one million slaughtered animals per year are France, Germany, Italy, Spain, the Netherlands, Ireland and Poland. Accurately characterising the EU beef cattle population is challenging because existing EU statistics often do not distinguish between dairy and suckler cattle and lack precise data for all animal categories involved in beef production. Suckler herds are mainly kept on farms with access to pasture during the grazing season (7-8 months) with housing during winter. In the EU, the most common practice is spring calving with suckler cows calving between January and March and suckler calves being weaned at the end of the grazing season. Suckler calves are reared by their dam (usually a beef breed) and are weaned between 5 and 11 months of age to be further produced as fattening cattle. A proportion of the female calves are usually kept as replacement heifers. Autumn calving can also occur with calves born between August and October being weaned at the beginning of the subsequent grazing season. All-year pasture systems exist in the EU but are infrequent; fully indoor housing systems are also rare.

Suckler cows and heifers graze on pastures during the grazing period, with typically no supplementary feeding. During the winter housing period, they are usually placed on a forage-only diet: grass silage (the most common), maize silage or hay. A limited amount of concentrates can also be provided especially around calving. When indoors, spring-calving suckler cows are usually housed in groups (without their calves as they have now been weaned). Autumn calving suckler cows and their calves are mainly housed in loose-housing with open straw bedded pens. Before being slaughtered, cull suckler cows can be fattened either on grass with supplements or indoors with preserved forage and supplements.

Fattening cattle comprise another beef cattle category, weaned cattle reared for the production of beef. Fattening cattle can include bulls, steers (castrated males, also known as bullocks) or heifers. One source of fattening cattle originates from suckler herds where a suckler calf becomes a fattening animal once it has been weaned from its mother, usually at 5-11 months. Another source of fattening cattle are dairy calves, which are usually separated from their mother within 24 hours after birth and weaned from milk at 2-3 months. Fattening cattle are primarily kept in indoor systems for a period of 6-9 months (cattle from suckler herds) or for 6-15 months (cattle from dairy herds). Much less common is to keep fattening cattle in systems with pasture access

(such as in Ireland), or even rarer in outdoor feedlots (occurring in Portugal). The most common practice is to keep fattening cattle in loose housing with slatted floors or in solid concrete floors with bedding, with space allowances usually varying from 2.4 to 5.5 m² per animal for bedded pens and from 1.8 to 3.2 m² for slatted pens depending on the weight of cattle. Tethering fattening cattle is rare.

Fattening cattle undergo two main feeding phases: a growing phase with a diet first rich in fibre and then protein, and a finishing phase with an energy-rich diet composed of a high concentrate amount. Fattening feeds commonly include concentrates (often *ad libitum*) with silage (grass or maize silage), or hay and straw in southern Europe. Feed can be delivered in a Total Mixed Ration (TMR, mixing all feed ingredients into a single homogeneous ration) or with a 'separate feeding' technique (the different components of the diet are delivered separately). In fattening systems with pasture access, fattening cattle are kept on pasture with minimal supplementation during the grazing season. Fattening cattle are slaughtered at various weights and ages, typically between 12 and 36 months, depending on the country and sex. Heifers and steers are sometimes slaughtered at an older age than bulls.

An additional category of beef cattle is breeding bulls. These are male bovines specifically bred, selected and managed for the purpose of siring beef or dairy cattle. Similarly to suckler cows, breeding bulls usually spend more than 6 months per year on pasture and during winter are kept in loose-housing pens. Breeding bulls (beef and dairy) are utilised in two ways: natural mating, where they physically mate with cows, and artificial insemination (AI), where their semen is collected and used to inseminate cows. Natural mating is primarily used on suckler cow farms with the breeding bull running with the cows for a short period of time during the year, usually on pasture. AI is a prevalent technique for dairy cows with semen of breeding dairy bulls but can also be inseminated with semen of breeding beef bulls; AI is also sometimes used on suckler cows (depending on breed and country). Bulls selected for AI, once they reach sexual maturity, are kept at facilities known as "AI stations" where semen is collected and subsequently shipped for inseminating cows on farm.

Finally, cull dairy cows refer here to dairy cows that are slaughtered at the end of their productive lifespan for the production of meat. Cull dairy cows are typically slaughtered without any finishing feeding period. In those instances when a finishing period takes place, this occurs mainly indoors with forage or concentrates, or by grazing on high-quality pasture with supplementation.

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1. Introduction

This report addresses part A – Term of Reference (ToR) 1 of a mandate on the protection of beef cattle on farm received from the European Commission (EC). It provides an overview of common beef cattle housing and practices for keeping beef cattle in the EU. The welfare implications of such beef cattle housing and husbandry practices are discussed in a separate publication that addresses part B (ToR 2a-f and ToR 3) of the mandate (EFSA AHAW Panel, 2025).

The mandate request received by the EC is provided below.

1.1. Background and Terms of Reference as provided by the European Commission

1.1.1. Background

In accordance with the Farm to Fork Strategy, published on 20 May 2020, the Commission is working on the revision of the EU animal welfare legislation. This includes the following acts:

- Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes[1];
- Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens[2];
- Council Directive 2008/119/EC of 18 December 2008 laying down minimum standards for the protection of calves[3];
- Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the protection of pigs[4];
- Council Directive 2007/43/EC of 28 June 2007 laying down minimum rules for the protection of chickens kept for meat production[5];
- Council Regulation (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97[6];
- Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing[7].

There is currently no specific EU animal welfare legislation covering beef cattle, however Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes applied for this animal species. EFSA adopted opinions on the welfare of beef cattle in 2001 and 2012 (EU-SCAHAW, 2001; EFSA AHAW Panel, 2012).

Against this background, the Commission would like to request EFSA to review the available scientific publications and other sources to provide an updated and sound scientific basis for possible future EU specific legislation on the welfare of beef cattle.

This request is about the protection of beef cattle on farm, including suckler calves, fattening cattle, suckler cows, heifers, breeding bulls and end of career dairy and suckler cows.

[1] OJ L 221, 8.8.1998, p. 23–27
[2] OJ L 203, 3.8.1999, p. 53–57
[3] OJ L 10, 15.1.2009, p. 7–13
[4] OJ L 47, 18.2.2009, p. 5–13
[5] OJ L 182, 12.7.2007, p. 19–28
[6] OJ L 3, 5.1.2005, p. 1–44
[7] OJ L 303, 18.11.2009, p. 1–30

This mandate does not cover the welfare of veal calves, nor the welfare of calves born on dairy farms that are slaughtered for beef (up to six months of age) as they have been covered in a dedicated Scientific opinion (EFSA AHAW Panel, 2023a).

The above-mentioned cattle categories are understood as follows:

- Suckler calves are reared by their dam (usually a beef breed) and are weaned at approximately 6 months of age.
- Fattening cattle are weaned cattle (greater than 6 months old) being farmed for the production of beef. This assessment covers the production of these cattle until they are slaughtered at various ages, depending on the production system in question.
- Suckler cows/heifers give birth to and rear suckler calves until they are weaned.
- Breeding bulls sire calves, naturally or via artificial insemination (AI), that are used for beef production.
- End of career dairy cows are dairy cows who are no longer producing milk and are being kept for meat production.
- End of career suckler cows are cows no longer being used to produce and mother suckler calves but are being kept for the production of meat.
- Dual purpose breeds: breeds of cattle that can be used for both beef and milk production.

1.1.2. Terms of Reference

The Commission therefore considers opportune to request EFSA to give an independent view on the protection of beef cattle.

A. The Commission requests EFSA to deliver a **Technical report** in accordance with Article 31 of Regulation (EC) No 178/2002[8] on the elements below:

TOR 1. A review of the most common husbandry systems and current practices for keeping suckler calves, fattening cattle, suckler cows, heifers, breeding bulls, end-of-career dairy cows and end of career suckler cows in the EU.

This is to include types of housing, flooring and bedding, access to the outdoors, periods at grass and nutrition and feeding. It also includes a description of calving facilities in use and the practice of tethering.

B. The Commission requests EFSA to deliver a **Scientific opinion** in accordance with Article 29 of Regulation (EC) No 178/2002[8] focusing in particular in the problems identified below (TOR2 a-f & TOR3):

TOR 2. For at least the categories of cattle, husbandry practices and hazards listed below in TORs (2a-2f), EFSA will:

- Identify the most relevant welfare consequences.
- Describe suitable ABMs to detect and monitor the most relevant welfare consequences on farm.
- Provide qualitative or quantitative recommendations to prevent or mitigate the welfare consequences.

[8] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–24

The lists of hazards for each type of cattle described below are non-exhaustive and are provided as a guide:

TOR 2a. Welfare assessment of housing conditions for beef cattle (including feed lots) in relation to:

- Flooring – types of flooring, including bedding and resting areas;
- Minimum space allowance at different resources (e.g. total space allowance and space needed in bedding and resting areas, feeding trough space requirements);
- Water access-type of drinkers, number of drinking points;
- Nutrition and feeding strategies;
- Extreme environmental heat (housed and outdoors);
- Environmental enrichment;
- Lack of outdoor access;
- Mixing of cattle.

TOR 2b. Welfare of fattening cattle kept at grass considering:

- Outwintering: protection from cold, wind, rain and underfoot conditions;
- Nutrition and feeding;
- Water access.

TOR 2c. The risk to the welfare of suckler cows and calves associated with the weaning of suckler calves.

TOR 2d. The risk to welfare associated with the mutilation of cattle including:

- Castration;
- Disbudding;
- Dehorning;
- Tail docking.

TOR 2e. The risk to welfare associated with breeding strategies and genetics in relation to:

- Hypermuscularity;
- Dystocia and caesarean sections;
- Polledness;
- Maternal ability;
- Temperament.

TOR 2f. Decision making criteria for the euthanasia of end of career dairy and suckler cows being kept for the production of beef.

TOR 3. The assessment of Animal Based Measures collected in slaughterhouses to monitor the level of welfare on farm for fattening cattle.

1.2. Interpretation of the terms of reference

This Technical report aims at addressing the part A (ToR 1) of the mandate relevant to the scientific and technical assistance in accordance with Article 31 of Regulation (EC) No 178/20028 (see Section 1.1.2).

The mandate refers to the protection of beef cattle (un-weaned suckler calves, fattening cattle, suckler cows and heifers, breeding bulls, cull dairy cows and cull suckler cows). It does not cover the welfare of veal calves, nor the welfare of calves born on dairy farms that are subsequently slaughtered for beef because these categories have already been covered in the Scientific opinion (SO) on the welfare of calves (EFSA AHAW Panel, 2023a). However, any practices specific to dairy-beef calves (i.e. calves born on a dairy farm to a dairy cow and subsequently slaughtered for beef, not veal) not already addressed in the SO on welfare of calves (EFSA AHAW Panel, 2023a) are described in this report. There are also practices specific to fattening cattle (which also apply to fattening dairy-beef cattle) that are described and assessed as appropriate.

Regarding the definition of cattle categories in this report, fattening cattle is here defined as cattle being in either the growing or finishing phase. In addition, the term "cull cow" is used instead of "end of career cow" as mentioned in the TORs because "cull cows" is a term more commonly used in the literature.

The objective of this report is the description of the husbandry systems and practices applied in beef farming. The risk assessment of the practices and housing will be included in the Scientific opinion on the welfare of beef cattle which will be published separately.

This Technical Report presents a compilation of information submitted by stakeholders in response to a Public call for evidence launched by EFSA [: https://connect.efsa.europa.eu/RM/s/consultations/publicconsultation2/a0lTk0000001qhJ/pc0742]. The data were provided through a Public call for evidence and reflect a variety of practices reported by interested parties concerning the welfare of beef cattle. The data provided is hereby presented as received and was not verified or validated by EFSA.

2. Data and methodologies

2.1. Data

Three sources of data were used in this report: 1) data from relevant scientific articles collected through an extensive literature search; 2) data submitted by stakeholders through a Public call for evidence launched by EFSA (PC-0742); and 3) data on beef cattle population in the EU retrieved from Eurostat. Details on how these sources of data were used for the purposes of this report are presented in the methodologies section below.

2.2. Methodologies

2.2.1. Literature review

An extensive literature search was performed using the Web of Science Core collection to gather relevant information on housing systems and practices used in the EU for keeping beef cattle. The search was restricted to records published between 2012 and 25 February 2025 with an English title and abstract. Additionally, any relevant publications known to the authors and not

identified by the search were included. For further details on the literature search strategy and results, see Appendix A.

2.2.2. Stakeholder meeting and Public call for evidence

In line with its policy on openness and transparency, and as part of its engagement approach, EFSA organised a meeting with its stakeholders to promote a technical discussion on the available data and data sources that would inform EFSA's scientific advice on the welfare of beef cattle on farm (for details of this event, see EFSA (online a)).

The meeting took place in Brussels on the 7–8 of November 2023 with the main aim of presenting a Public Call for Evidence that was launched by EFSA shortly after. The call for evidence was open from 7 December 2023 to 31 January 2024 to collect information and data to support an assessment of the welfare of beef cattle on farm requested by the EC.

The information sought by EFSA focused on the following topics: 1) beef cattle population, 2) husbandry systems, 3) production stages, 4) cattle housing, 5) flooring (types of flooring, including bedding and resting areas), 6) minimum space allowance at different resources (e.g. total space allowance and space provided in bedding and resting areas, feeding trough space requirements), 7) water access (type of drinkers, number of drinking points), 8) feeding and nutrition, 9) outdoor access, 10) tethering, 11) environmental enrichment, 12) calving facilities, 13) castration, 14) disbudding of beef calves, 15) dehorning of beef cattle, 16) tail docking, 17) hypermuscularity, 18) dystocia and caesarean sections, 19) polledness, 20) maternal ability, and 21) temperament. For the purposes of this report, only information concerning husbandry systems and farming practices were considered (i.e. topics from 1 to 12). The remaining topics (from 13 to 20) were considered in the context of the welfare assessment described in the Scientific opinion on the welfare of beef cattle (EFSA AHAW Panel, 2025) (part B, ToR 2a-f and ToR 3 of the mandate).

A total of 22 stakeholders from 10 countries (Belgium, Czechia, Denmark, Finland, Germany, Ireland, Italy, the Netherlands, Spain, United States) submitted information via the Public call for Evidence, consisting of written comments, scientific papers and grey literature (technical reports, outputs from databases, or non-published data). Since the information contained in this report is inherently tied to the European context, data submitted by stakeholders from non-EU countries were solely considered whenever relevant to welfare assessment taking into account differences on specific farming practices from common practice in European Union Member States (EU MSs).

In total, 226 comments and 374 attachments were received. All comments and attachments submitted in languages other than English were translated using the online tool Google Translate for documents (Google Translate, online) to facilitate their analysis and integration into the report. The entirety of the data collected by each stakeholder in the Public call for Evidence is publicly available (EFSA, online b). A list of the stakeholders that engaged with EFSA by attending the event and/or submitting information on beef farming practices is provided in Appendix B.

The contributions deemed relevant for this report were subsequently analysed and integrated into the description of the housing and practices utilized in beef cattle farming. Out of 22 stakeholders, 13 provided inputs that were considered relevant for this report and were referenced as 'EFSA Public call for evidence 2024', with 'PC-0742' as prefix of the public consultation followed by the specific submission section number and the stakeholder who submitted the information. For an overview of the submissions that were used in this report, please see Appendix E.

When submissions from stakeholders contained specific information on husbandry practices common in each MS, such examples and the respective country they apply to are given in the text. For this reason, some countries are mentioned more frequently than others.

2.2.3. Figures on beef cattle population in the EU

Figures on beef cattle population (Eurostat, online a), number of slaughtered animals (relative to years 2019, 2020, 2021, 2022, and 2023) (Eurostat, online b), glossary (Eurostat, online c), and housing types (Eurostat, online d), in the EU were sourced from Eurostat. The Eurostat website was accessed between 26 December 2024 and 04 March 2025.

3. Assessment

The assessment followed the topics listed in the mandate received by EFSA (part A, ToR 1; for details see Sections 1.1.1 and 1.1.2).

3.1. Overview of beef cattle categories

Beef cattle refer to all animals that contribute to the production of beef meat. Beef cattle either originate from suckler herds, which are cattle specifically born and reared for beef production, or from dairy herds, which are kept primarily for milk production.

In suckler herds, suckler cows give birth to suckler calves and rear them until weaning (i.e. separation from the dam and weaning from milk), which occurs at the age of 5 to 11 months. A proportion of the female calves are usually kept as replacement heifers, but the majority of suckler calves (e.g. all the male calves and a large proportion of the female calves) are then reared as fattening cattle.

In dairy herds, dairy cows give birth to calves in order to initiate lactation. These calves are usually separated within the first day after birth and weaned from milk at around 2–3 months (EFSA AHAW Panel, 2023a). A significant proportion of female calves are kept as dairy cow replacements. Dairy calves (mostly male calves) that are not kept as replacements are either used for veal production or to produce beef. For a description of the housing of calves kept on dairy farms, or of calves kept for veal, please refer to the EFSA Scientific opinion on the welfare of calves (EFSA AHAW Panel, 2023a).

Thus, fattening cattle are weaned cattle either from suckler herds or dairy herds and are farmed for the production of beef. Fattening cattle can be bulls, steers (i.e. castrated males, also known as bullocks) or heifers.

In addition to fattening cattle, cull cattle, including cull dairy and suckler cows, heifers and breeding bulls, also contribute to the production of beef.

To sum up, beef cattle include:

- suckler cows and heifers, which produce suckler calves and are culled at the end of their productive lifespan;
- suckler calves, which are reared with their dam (suckler cow) until weaning;
- fattening cattle, which originate either from suckler herds or from dairy herds (dairy-beef cattle) and that are farmed for the production of beef;
- breeding bulls, which are used for reproduction and are culled at the end of their productive lifespan;
- cull dairy cows, which are dairy and suckler cows whose primary productivity (milk, calves) is considered insufficient. They may be sent to slaughter, kept for fattening or killed.

Figure 1 depicts the animal categories and production flows of beef cattle categories discussed in this section.

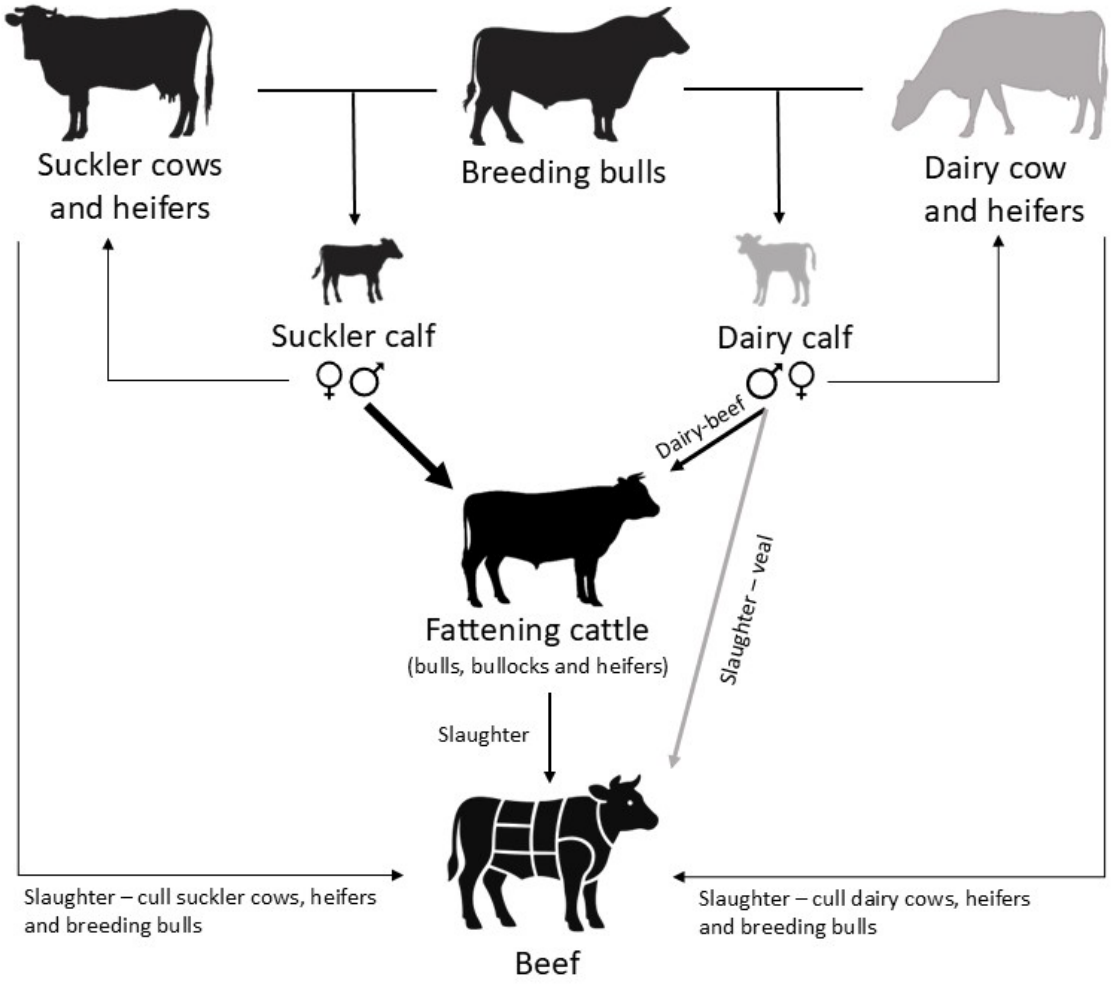


FIGURE 1: Animal categories and production flows of beef production systems. Icons and arrows in black are discussed in the report: fattening cattle, suckler cows, suckler calves, breeding bulls and cull dairy cows. An assessment of dairy cows and dairy calves (including veal) was already carried out by EFSA in 2023 (EFSA AHAW Panel, 2023a) and hence are not discussed in this report (icons and arrow in grey).

3.2. Beef cattle population in the European Union

In 2023, the total cattle population in Europe was approximately 73 million animals (Eurostat, online a).

An accurate description of the European beef cattle population is difficult because current European statistics do not generally distinguish between dairy and suckler cattle (except sometimes for cows) and do not provide figures for every animal category contributing to beef production.

As shown in Table 1 and Figure 2, the distribution of animals farmed and slaughtered within each category is specific to each country. Table 1 provides the numbers of live animals, estimated as an average of annual figures of years 2019–2023, for the following beef cattle categories: young cattle less than 1 year old for slaughter (including suckler calves, young fattening cattle and dairy calves kept for veal production), male fattening cattle (bulls and

bullocks, including also the small population of breeding bulls), female fattening cattle (heifers for slaughter) and non-dairy cows including mainly suckler cows (see also Table 10 in Appendix C for more details regarding these cattle categories). Specific numbers for replacement suckler heifers and breeding bulls are not available.

There are around 10 million suckler cows in the EU, and they are mainly present in France (3.9 million), Spain (2.1 million), Ireland (0.9 million), Germany (0.6 million), Portugal (0.5 million), Italy (0.4 million) and Belgium (0.4 million), with the remaining suckler cows being present in low numbers in other countries.

In the EU, there are 9.1 million fattening cattle, consisting of 6.4 million bulls and bullocks and 2.7 million fattening heifers. Fattening bulls and bullocks are mainly present in France (1.1 million), Poland (1 million), Germany (0.9 million), Ireland (0.9 million), Italy (0.6 million) and Spain (0.4 million). Fattening heifers are mainly farmed in France (0.8 million), Ireland (0.6 million), Italy (0.4 million), Germany (0.2 million) and Spain (0.2 million).

Over 5 million calves of less than 1 year are reared for slaughter in the EU. The main producers are Spain (1.7 million), the Netherlands (1.0 million), Italy (0.9 million) and France (0.6 million). For the Netherlands, Italy and France, this represents mainly the production of veal from dairy calves.

According to Eurostat (online a), there are around 20.3 million dairy cows in Europe mainly in Germany (3.8 million), France (3.3 million), Poland (2.1 million), Italy (1.9 million), the Netherlands (1.6 million), Ireland (1.5 million) and Romania (1.1 million). Considering an annual culling rate of 25-30% (Nor et al., 2014), around 5 to 6 million dairy cows are culled every year.

TABLE 1: Population of different beef cattle categories in the EU (number of animals rounded to the hundred).

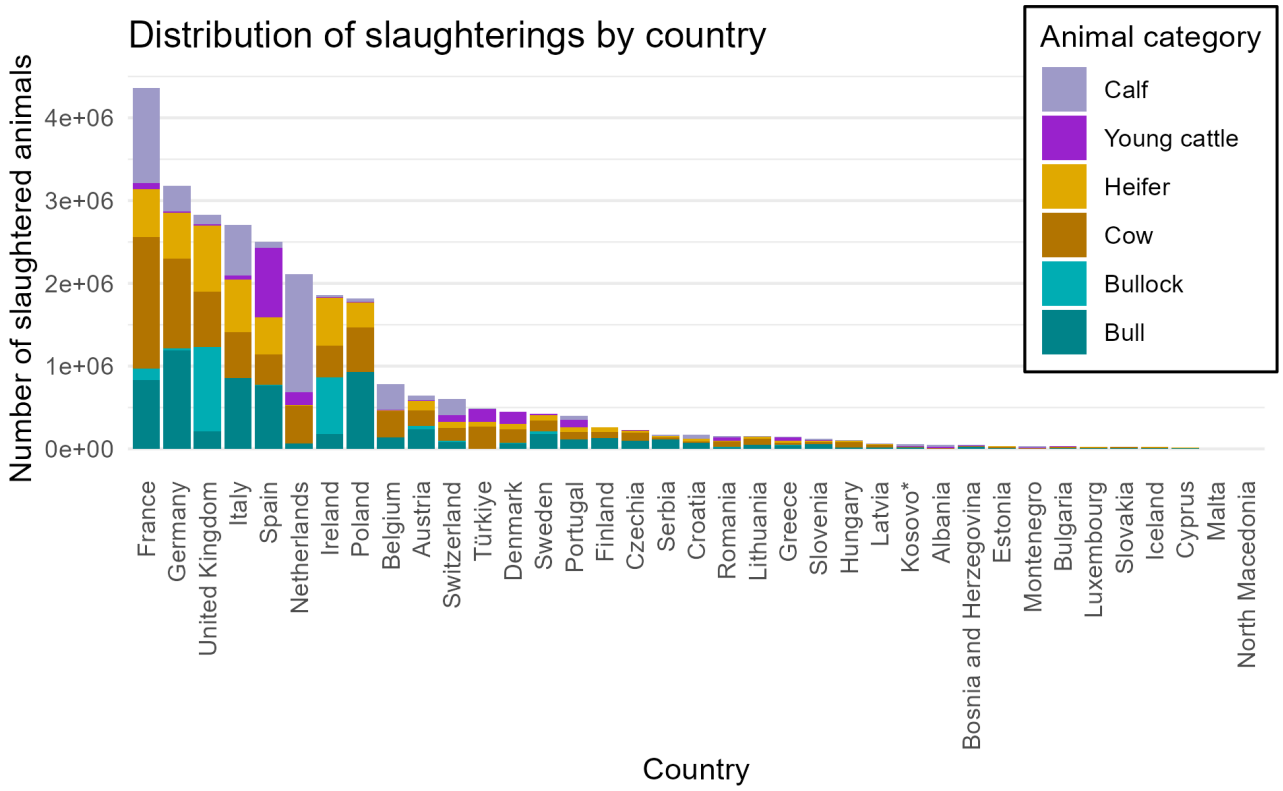
GEO (Labels)	Calves and young cattle (< 1 year), for slaughter	Male bovine animals (bulls and bullocks)	Heifers (for slaughter)	Non-dairy cows	Total [a]
European Union (27 countries)	5,715,700	6,413,400	2,741,700	10,558,800	25,428,800
France	574,000	1,114,400	848,500	3,879,900	6,416,900
Spain	1,745,600	414,300	169,700	2,078,200	4,407,900
Ireland	32,500	959,200	584,100	889,900	2,465,800
Italy	933,900	657,200	351,800	409,100	2,352,200
Germany	199,700	937,200	230,500	622,500	1,989,900
Poland	100,600	981,000	52,000	209,100	1,342,800
Netherlands	1,022,800	59,600	52,200	44,000	1,178,600
Portugal	97,000	118,200	27,500	495,300	738,200
Belgium	171,500	123,000	34,500	378,300	707,500
Austria	108,600	183,400	90,700	177,200	560,000
Denmark	242,500	33,900	67,000	75,000	418,400
Sweden	19,700	144,600	41,800	196,700	402,900
Czechia	1,300	113,900	11,800	211,200	338,200
Hungary	86,400	52,600	33,200	152,400	324,600
Greece	85,000	70,100	25,500	140,000	320,700
Romania	86,900	78,900	20,400	32,200	218,500
Bulgaria	23,600	25,400	11,200	150,800	211,200
Finland	2,500	97,800	22,400	61,500	184,400
Lithuania	60,400	50,700	4,900	64,200	180,400
Slovenia	11,900	68,700	24,900	64,200	169,900
Latvia	51,800	14,800	11,000	60,500	138,200
Croatia	19,200	58,600	10,000	41,000	128,800
Slovakia	19,100	29,100	7,100	70,600	126,000
Estonia	3,400	10,500	2,000	30,700	46,800
Luxembourg	4,500	12,600	5,600	23,000	45,700
Cyprus	9,900	1,400	200	200	11,900
Malta	0	1,000	200	200	1,500

[a] The total corresponds to the sum of the four categories: calves and young cattle, male bovine animals, heifers and non-dairy cows in this table. The total here does not represent the total beef cattle population (numbers for suckler replacement heifers, cull dairy cows and breeding bulls are missing).

Source: Eurostat data, mean 2019–2023 (Eurostat, online a).

According to Eurostat (online b), a yearly average of 22.8 million bovines have been slaughtered in the European Union between 2019 and 2023 (Appendix C, Table 11). This number consists of 28% cull cows (dairy and suckler cows); 27% bulls (> 12-month-old mainly suckler and dairy-beef males but also some breeding bulls); 18% calves (< 8 months, mainly from dairy herds as veal); 16% heifers (mainly fattening beef heifers but also cull dairy heifers); 7% young cattle (from 8 to 12 months) and 4% bullocks (castrated males > 12 months) (Eurostat, online b).

The main producers of beef cattle in the EU are France (4.4 million slaughtered animals), Germany (3.2 million), Italy (2.7 million), Spain (2.5 million), the Netherlands (2.1 million), Ireland (1.9 million) and Poland (1.8 million) (see Figure 2 or Appendix C for detailed figures).



*Kosovo – this designation is without prejudice to positions on status and is in line with United Nations Security Council Resolution 1244 and the International Court of Justice Opinion on the Kosovo Declaration of Independence

FIGURE 2: Total number of slaughtered cattle in the EU (EU27) ranked by Member State. Eurostat data, mean 2019-2023 (Eurostat, online b). Calf: < 8 months; Young cattle: 8–12 months; Heifer: females > 12 months that have not yet calved; Cow: females that have calved; Bullock: castrated male > 12 months; Bull: non-castrated male > 12 months. All figures are in Table 11 and the full definition of animal categories is in Table 12 in Appendix C.

3.3. Animal categories and stages of production

3.3.1. Suckler cows and calves

A suckler cow gives birth to a suckler calf and rears it until weaning (Figure 3). Suckler calves are weaned between 5 and 11 months of age to be then kept as fattening cattle, but a proportion of the female calves will be kept as replacement heifers (Figure 4).

FIGURE 3: A suckler cow with calf (© Agriland, online).

FIGURE 4: Replacement suckler heifers at grass (© Agriland, online).

3.3.1.1. Calving

In Europe, calving mainly occurs in early spring or autumn. Spring calving (i.e. calving from January to March, (Dutheil, 2021) is the most common practice (e.g. in Ireland, 90% of suckler cows calve in spring, EFSA Public call for evidence, 2024 - PC-0742 8 - IFA). During calving, cows are generally kept in pens and calves are born indoors (Dutheil, 2021). Spring calving synchronises the cow's peak lactation period with the peak of grass growth (Dutheil, 2021; Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA). Spring-born suckler calves can spend a grazing season of up to 7–8 months (i.e. from March to October) suckling their dam as observed in Ireland (Lawrence et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA) or in certain regions of France (Dutheil, 2021). In addition

to the advantage of minimal feed input costs, spring calving also allows savings on straw requirements and farm buildings (Devienne et al., 2016).

Autumn-born calves (i.e. calving from August to October) typically spend the winter indoors with their mothers (Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA). Their management is more complicated because of the need to support cows' peak lactation period with winter rations (Allen, 2004) and without access to grass. Calves born during autumn are typically turned out to pasture again in spring to be weaned in midsummer (e.g. before July in France). When autumn-calved cows are turned out to pasture in spring, milk yield increases, but by late summer, calves require additional creep feeding to maintain daily weight gains (Allen, 2004). Compared to spring-born calves, autumn-born calves incur higher feed input costs but also command a higher selling price (Dutheil, 2021).

Non-seasonal calving is characterized by year-round breeding and results in calving across all seasons. This approach provides greater flexibility, enabling continuous calving and calf rearing while ensuring a consistent beef supply throughout the year. It is particularly favoured by quality-focused supply chains catering to niche markets on a year-round basis (Dutheil, 2021).

3.3.1.2. Weaning

Weaning in suckler cattle usually involves two steps at the same time or in short succession: transition from milk feeding to a solely solid food diet and separation of the suckler cow from its calf. It typically occurs when suckler calves are between 5 and 11 months old.

The weaning age of calves, and therefore their age at sale for weanlings, varies between countries. In Germany, weanlings go to fattening units mostly at 6–9 months of age (Deblitz and Zavyalova, 2024), whereas in France, weaning usually occurs later at 9–11 months (Dutheil, 2021). The weaning age can also depend on the calving season and the breed. In France, Limousins are weaned on average at 9.7 months, Salers at 9.9 months, Charolais at 10.6 months and Aubrac at 11.2 months (Dutheil, 2021). This is influenced by the breed's precocity as well as regional management practices such as the housing of cattle for winter (Dutheil, 2021; Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA).

In addition, the following aspects can be considered for the choice of the weaning time: the weight of the calves, the amount of concentrates they are consuming or market conditions (Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA). Finally, weaning is also often influenced by natural events such as seasonal variations in feed availability and the onset of sexual maturity, to prevent young bulls from mating with young heifers. As suckler cows and their calves are usually kept in groups, the weaning of calves usually occurs in groups.

For both spring- and autumn-born calves, weaning usually takes place while they are out at grass. Weaning can be abrupt or gradual. Gradual weaning methods and practices are diverse and include two-step methods which include either the use of anti-suckling devices (e.g. nose flap) or fence-line weaning (i.e. separating the cows and their calves with a fence to loosen the cow-calf bond while keeping them in similar surroundings) (Teagasc, 2021), and gradual pre-weaning nutrition (feeding of concentrates to the calves four weeks before weaning) (Teagasc, 2021). The vaccination of calves for pneumonia prior to weaning can also be recommended (e.g. in Ireland) (Teagasc, 2021). In addition, it is advised not to overlap any other procedures such as castration with the weaning process (Teagasc, 2021).

3.3.1.3. Reproduction

The aim of a suckler farm is for each cow to have a calf each year. This implies that mating/bulling post-calving typically should occur within 60 to 90 days postpartum to maintain the optimal calving interval of one year. Suckler herds mostly rely on natural mating using a pedigree stock bull running with the cows for a period of time depending on whether they are spring or autumn calving. The use of artificial insemination (AI) does however make up a significant proportion in some places, with for example 24% of beef calves in 2017 in Ireland having been sired by AI sires (Teagasc, online b).

3.3.1.4. Productive lifespan and culling

The average age at first calving is approximately three years for suckler cows (Dutheil, 2021; Teagasc, online a). A suckler cow is then commonly used for calf production for approximately 6 to 8 years and culled at around 9–10 years, producing multiple calves throughout her productive lifespan (Dutheil, 2021). However, the productive lifespan depends on the system and the breed. In the case of breeds like the Belgian Blue, known for their hypertrophic muscle development, calving can often lead to dystocia, requiring programmed caesarean sections (Coopman et al., 2003). These cows are usually managed differently, producing only 2–3 calves before being fattened and sent to slaughter due to the complications associated with their breed characteristics.

Culling is generally decided when suckler cows are no longer considered productive, exhibit signs of infertility, suffer from health issues (e.g. udder problems, lameness), display behavioural problems or produce light calves at weaning. Culled cows may be sent directly to the abattoir, but they are often sold to fattening farms or fattened on the original farm before being sent for slaughter.

The selection of replacements, important for maintaining the herd, can involve purchasing maiden heifers or selecting from within the existing herd (Teagasc, 2022). In case of fertility or health issues, these heifers may also be culled from the suckler herd and subsequently fattened for beef production.

3.3.2. Fattening cattle

Fattening cattle are weaned cattle (usually older than six months) being farmed for the production of beef. These can be bulls, steers (castrated males, also known as bullocks) or heifers.

3.3.2.1. Origin and breeds

Fattening cattle from suckler herds exhibit significant genetic diversity, with breeds tailored to varying climatic and nutritional environment (e.g. the small early-maturing Hereford, the large late-maturing Charolais). Most fattening cattle from suckler herds are the result of the crossing of a pedigree beef bull with a beef breed suckler cow.

Fattening cattle from the dairy herds can be of pure dairy (Figure 5) or dual-purpose breeds or from crossbreeding between a dairy cow and a beef breeding bull.

FIGURE 5: Friesian bull calves (dairy breed) (© Agriland, online).

3.3.2.2. Two phases: growing and finishing

The production of fattening cattle involves two phases, the growing phase and the finishing phase. The objective of the growing phase is to enable the animal to develop its musculoskeletal system. The aim of the finishing phase is to increase the animal's weight and develop both muscle and fat tissues in preparation for slaughter. While the growing phase occasionally occurs on pasture in certain countries, the finishing phase almost always involves housing. This happens to control the feed intake of the animals with a view to meet the meat characteristics of the target market in question. In this report, fattening cattle refers to cattle being in either of the growing or finishing phases, and the fattening period refers to both phases.

3.3.2.3. Slaughter age

Fattening cattle are slaughtered at a range of ages and weights depending on type, sex and feeding regime locally available, leading to varying fattening periods between weaning and slaughter. Table 2 gives an overview of slaughter ages of main breeds of fattening cattle in different countries.

TABLE 2: Commonly used breeds, typical fattening period and slaughter age in different EU Member States.

Country	Breed/Type	Fattening period (months)	Age at slaughter (months)	Source
France	Beef breeds	–	18–24 (bulls)	Dutheil, 2021
		–	24–36 (heifers, steers)	
Germany	Dairy types (Black and red Holstein)			Deblitz and Zavyalova (2024); Bundesanstalt für Landwirtschaft und Ernährung (2025)
	Dual purpose breeds (Fleckvieh, Limousin, Brown Suisse) Crossbreeds	10	15–19	
	Beef breeds (Limousin, Charolais, Simmental, German Angus)			
Italy	French beef breeds and beef crossbreds	6–8	16–20	ISMEA (online)
	Rustic beef breeds (Chianina, Marchigiana, Piemontese, Podolica, Sarda, Modicana)	5–6	18–24	
	Crossbreeds	6–8	14–16	
Spain	Rustic beef breeds (Rubia Gallega, Avileña, Morucha, Retinta)	4–6	12–15	Marti S. (2024 IRTA (Spain), confirmed this by email on 10 May 2024)
	Dairy types (Holstein, rustic breed Bruna)	8–9		
	Crossbreeds			
Ireland	Beef breeds	–	< 16 (bulls)	Beef production system guidelines (Teagasc et al., 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA)
		–	18–20 (bulls, steers, heifers)	
		–	24 (heifers, steers)	
		–	28–30 (steers)	
	Dairy breeds (Holstein-Friesian)	–	< 16 (bulls)	
		–	18–20 (bulls, heifers)	
		–	24 (bulls)	
	Crossbreeds (Angus or Hereford x Dairy Cow)	–	19 (heifers)	
		–	23–26 (steers)	
Poland	– [a]	5–6	12–18	(The Polish Farm Advisory and Training Centre, confirmed
	– [a]	4–5	18–24	

Country	Breed/Type	Fattening period (months)	Age at slaughter (months)	Source
	– [a]	3–4	24–30	this by email on 18 February 2024)
Belgium	Dairy breeds (Holstein-Friesian) Beef breeds (Belgian Blue)	8–10	–	Van der Peet et al. (2018 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority)

Note: Member States are ordered by number of slaughtered beef animals (see Figure 2).
[a] In Poland, Limousine is the main beef breed (50% of all beef cattle), but Holstein represents 90% of cattle (Iwanowska and Pospiech, 2010; Kostusiak et al., 2019).

3.3.2.4. Mutilations

Castration and disbudding are frequently performed in suckler and dairy-beef calves with varying proportions of animals undergoing these practices depending on the country, husbandry system, and breed choice. Castration and dehorning are not commonly performed in fattening cattle. The implications of these mutilations on the welfare of beef are discussed in a separate publication (EFSA AHAW panel, 2025).

Castration is a procedure involving the removal or inactivation of testicles in order to improve meat quality and to reduce aggressive and sexual behaviours. Various castration methods exist, including surgical removal, the Burdizzo clamp, and rubber rings or bands that induce tissue necrosis via ischemia. The age at which castration is performed varies depending on national regulations, the method and the husbandry system. For example, in Ireland, castration can be performed before eight days of age using a rubber ring or before six months of age using a Burdizzo clamp without the requirement for veterinarian intervention or analgesia (Teagasc, 2020), however, above this age, castration must be conducted by a veterinarian using appropriate anaesthesia and/or analgesia (Teagasc, 2020). In Austria, castration is only possible with anaesthesia and post-surgical pain treatment and by a veterinarian or a specially trained person, and rubber rings are forbidden. In Germany, rubber rings are also forbidden, and anaesthesia is required above four weeks of age[9]. Systems with pasture access rely more on castration in comparison to indoor systems in order to reduce the safety risk posed by bulls at pasture (Bos, 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority).

Disbudding and dehorning are procedures aimed to improve human safety and ease cattle management. Disbudding refers to the destruction or removal of horn buds in young calves, while dehorning involves removing grown horns (i.e. after the horn buds have attached to the skull) in older cattle. Disbudding is performed from when horn buds are easily palpable up to around eight weeks of age (Stafford and Mellor, 2005). However, the age at which horn buds become palpable and the age at which disbudding is no longer feasible necessitating dehorning vary between breeds (Stafford and Mellor, 2005). National legislation on disbudding differs also across countries. Some countries suggest to avoid disbudding before two weeks old (e.g. France) (Ordre national des vétérinaires, 2019). Some calves are bred for polledness, i.e. they are born without horns (Figure 6). This avoids the need for disbudding or dehorning. Some countries legally require the use of local anaesthetics in general (e.g. Austria, Finland and the Netherlands) or after a certain age (e.g. after two weeks of age in Ireland or after six weeks in Germany), although the Council of Europe recommendations concerning cattle stipulate that disbudding without anaesthesia shall only be permissible in calves under four weeks of age (Council of Europe, online). In addition, the application of analgesia is mandatory in some countries, either in general (e.g. in Austria, Finland, Germany) or after a certain age (e.g. Ireland). The use of sedation can be mandatory in some MS (e.g. Austria, Luxembourg) or a recommendation in others.

[9] Tierschutzgesetz in der Fassung der Bekanntmachung vom 18. Mai 2006 (BGBl. I S. 1206, 1313), das zuletzt durch Artikel 2 Absatz 20 des Gesetzes vom 20. Dezember 2022 (BGBl. I S. 2752) geändert worden ist. https://www.gesetze-im-internet.de/tierschg/BJNR012770972.html

FIGURE 6: Polled beef calves (© Teagasc).

3.3.3. Breeding bulls

A breeding bull is a pedigree male bovine that is specifically bred, selected, and explicitly managed for the purpose of siring beef or dairy cattle (Figure 7). Breeding bulls are chosen based on desirable genetic traits such as growth rate, conformation, temperament, fertility and disease resistance. Their primary role is to contribute genetically to the next generation, thereby influencing the herd's quality and characteristics.

FIGURE 7: Charolais breeding bull (© Agriland, online).

Breeding bulls are utilized in two ways: natural mating, where they physically mate with cows, and AI, where their semen is collected and used to inseminate cows.

The relative use of natural mating, AI, or a combination of both, differs between countries depending on farm practices and breeding goals.

Natural mating is primarily used on suckler cow farms with the stock bull running with the cows for a short period of time during the year depending on the seasonality of calving required. For example, 88% of suckler calves are from natural mating in France (Dutheil, 2021), 80% in Ireland (Teagasc, 2022) and 70% in Spain (Marti S., IRTA (Spain), confirmed this by email on 10 May 2024). The bull-to-cow ratio, using natural mating, can vary by country (e.g. 1 bull for 30 cows in France, 1:25–30 in Italy, 1:10–80 in Austria) and by age (10–15 cows per young bull vs. 20–25 cows per mature bull) (Teagasc, 2024a). Replacement bulls are usually sourced from outside the herd, often from specialised stock bull breeders.

AI is a prevalent technique for genetic improvement and increased breeding efficiency, particularly in dairy operations. Dairy cows are mainly inseminated with semen of dairy breeding bulls but can also be inseminated with semen of breeding beef bulls such as in Belgium or in Germany where beef bulls (e.g. Belgian Blue) are widely used on dairy farms. In suckler farms, the use of AI is linked to winter months when the cows are easily reachable in the buildings (D'Alteroche, 2013). The use of AI on suckler farms can vary between breeds, such as in France where AI represent 8% in Limousine, 13% in Charolais, 19% in Blonde d'Aquitaine, and 23% in Belgian Blue (D'Alteroche, 2013). Sexed semen represents a small but growing percentage of AI (e.g. 9% in France (IDELE, online b), 20% of dairy AI in Ireland (Teagasc, 2024b)) and is primarily used in dairy herds especially on heifers (Holden and Butler, 2018; Diers et al., 2020; IDELE, online b).

Bulls used for AI are kept indoors in specialized insemination stations which belong to breeder organisations. Regular health checks and fertility evaluations maintain high reproductive and health standards.

Some farms combine natural mating and AI to optimize breeding outcomes, such as in Spain, where 30% of farms use AI but usually with a 50–50% ratio of AI and natural mating (Marti S., IRTA (Spain), confirmed this by email on 10 May 2024). This mixed approach offers greater flexibility and genetic diversity.

As for suckler calves, future breeding bulls are weaned at around 6–10 months of age. In Austria, beef Fleckvieh breeding bulls stay with their dam until ten months, benefiting a better physical development due to the higher milk production of their mothers' dual-purpose nature (Velik M., Agricultural Research and Education Centre Raumberg-Gumpenstein (Austria), confirmed this by email on 12 April 2024).

Semen collection for AI may start as early as 10–11 months of age (Teagasc, 2018). For natural mating, sires are sold at auctions from the age of 14 months onward and the common age when natural mating starts is 15–16 months. Pre-breeding examinations identify unfit bulls and ensure the bulls' health and readiness for breeding including physical and semen examination (Teagasc, 2018).

Culling typically occurs after a productive lifespan of 4–5 years. Factors such as herd size, genetic goals, and functional issues influence the decision to cull. Culled bulls are often sold for meat production.

3.3.4. Cull dairy cows

Cull dairy cows contribute on average to 27% of the total beef production within the EU (Vlemminx et al., 2023). In Germany, the Netherlands and France, the slaughter of these animals accounts for 32%, 42% and 50% of beef consumption, respectively.

Cull cows refer here to cows for which their primary productivity (milk, calves) is considered insufficient. Cull cows are fattened or slaughtered and contribute to beef production. Culling can be classified as voluntary or involuntary based on the reason underlying the culling decision (Hadley et al., 2006; EFSA AHAW Panel, 2023b). Reasons for culling dairy cows are similar to those for suckler cows except that mastitis and lameness tend to be more common in dairy cows as reasons to cull. Factors for voluntary culling include low production and cow aggressivity (Hadley et al., 2006). Involuntary culling includes removal due to infertility, injury or illness including metabolic disorders, (Chiumia et al., 2013); infertility, locomotory disorders and udder diseases being the most important reasons for culling for dairy cows (Vlemminx et al., 2023).

Dairy cows are usually culled at around 4.5–6 years of age after a productive lifespan of 2.5–4 years (Dallago et al., 2021).

3.4. Beef cattle production systems

Beef cattle production systems may be broadly categorized into two main types: indoor systems, where animals are kept indoors during the entire year (also known as intensive systems), and systems with pasture access, where cattle are housed for the winter and are out at grass for the remainder of the year. The prevalence of these systems throughout Europe depends on climate, the availability of grass, the stage of production and economic factors.

3.4.1. Suckler cows and calves

Figure 8 gives an overview of the different husbandry systems (systems with pasture access and indoor systems) and their implications regarding housing and grazing periods for both suckler cows and calves.

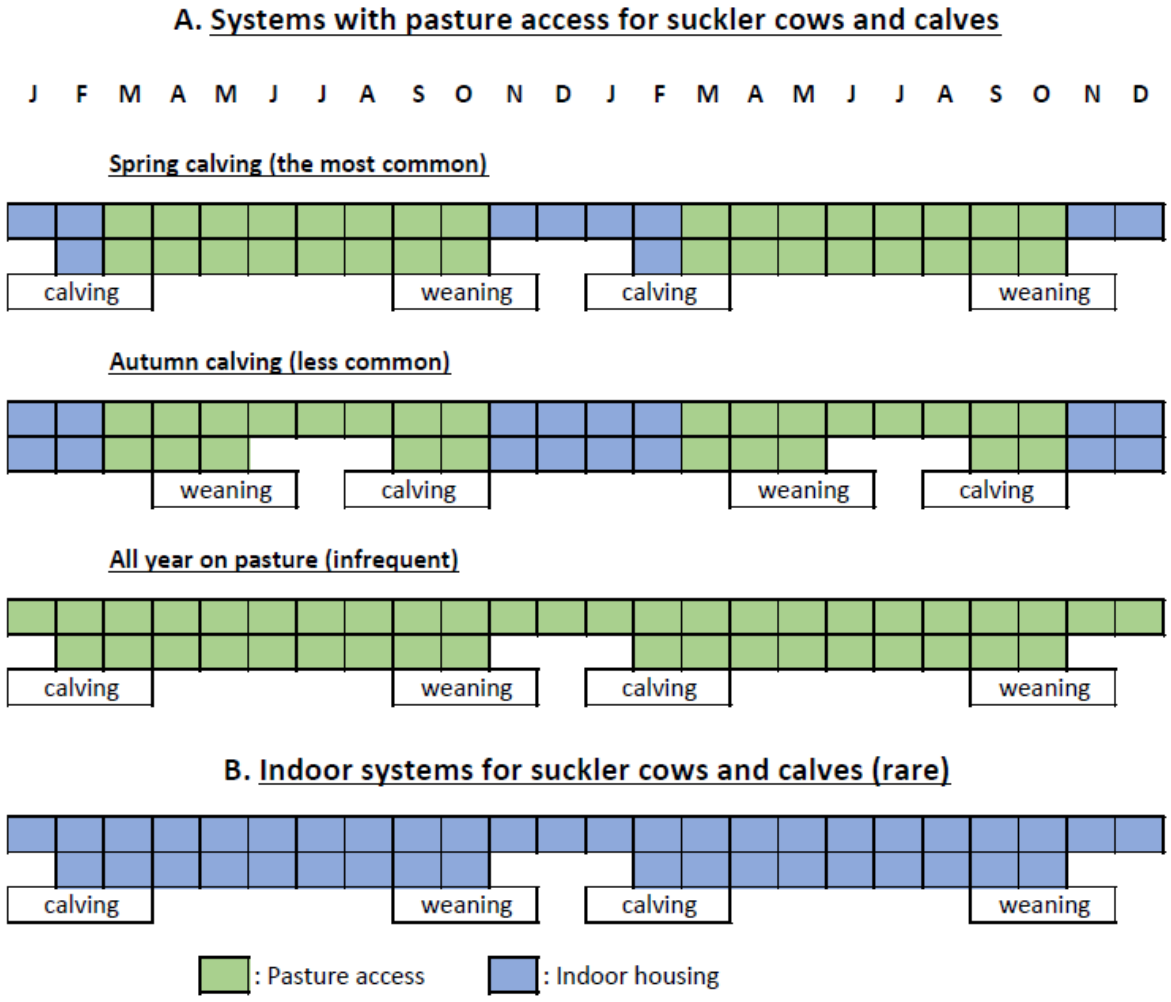


FIGURE 8: Production systems of suckler cows and calves in the EU.

In Europe, suckler cows are primarily kept on farms with pasture access, where they are kept outdoors during the grazing season and housed for the winter. Spring-born suckler calves are typically born indoors and reared on pasture with their dam until weaning, whereas autumn-born suckler calves remain indoors with their dam for a longer time compared to those born in spring (Figure 8).

The grazing period varies by region, typically lasting seven to eight months (Devienne et al., 2016). In France, 95% of suckler herds spend usually more than six months per year on pasture (Ministère de l'agriculture et de la souveraineté alimentaire, online). Outside the grazing season, suckler herds are usually housed in loose housing facilities and only rarely kept in tie stalls (Dutheil, 2021). Housing types vary widely, but the general setup in suckler farming includes a pen with a feeding area for cows, a lying area that is fully or partially straw-bedded, and creep/lie back areas where calves have access to higher-quality forage and feed (Dutheil, 2021). Suckler cows can also be kept on slatted floors. Figure 9 and Figure 10 show straw bedded creep/lie back area for calves.

FIGURE 9: Winter housing where cows are on concrete slatted floors (left side) and calves have straw bedded creep/lie back area (© Agriland, online).

FIGURE 10: Calves in deep bedded creep/lie back area featuring creep gate to give access to the cows. Cows in the back pen are kept on slatted floors (© Agriland, online).

See Section 3.53.5 on housing for a further description of housing types and housing features.

In some regions of France, Ireland, the Azores (Portugal), Germany, Austria and Spain, suckler herds are kept on pasture all year, sometimes with weather protection.

Lastly, suckler cows can be kept indoors all year either in loose housing or tie stalls, but such production systems are rare (EFSA Public call for evidence, 2024 - PC-0742 4 - Landwirtschaftskammer Nordrhein-Westfalen).

3.4.2. Fattening cattle

Figure 11 gives an overview of fattening cattle production systems in Europe.

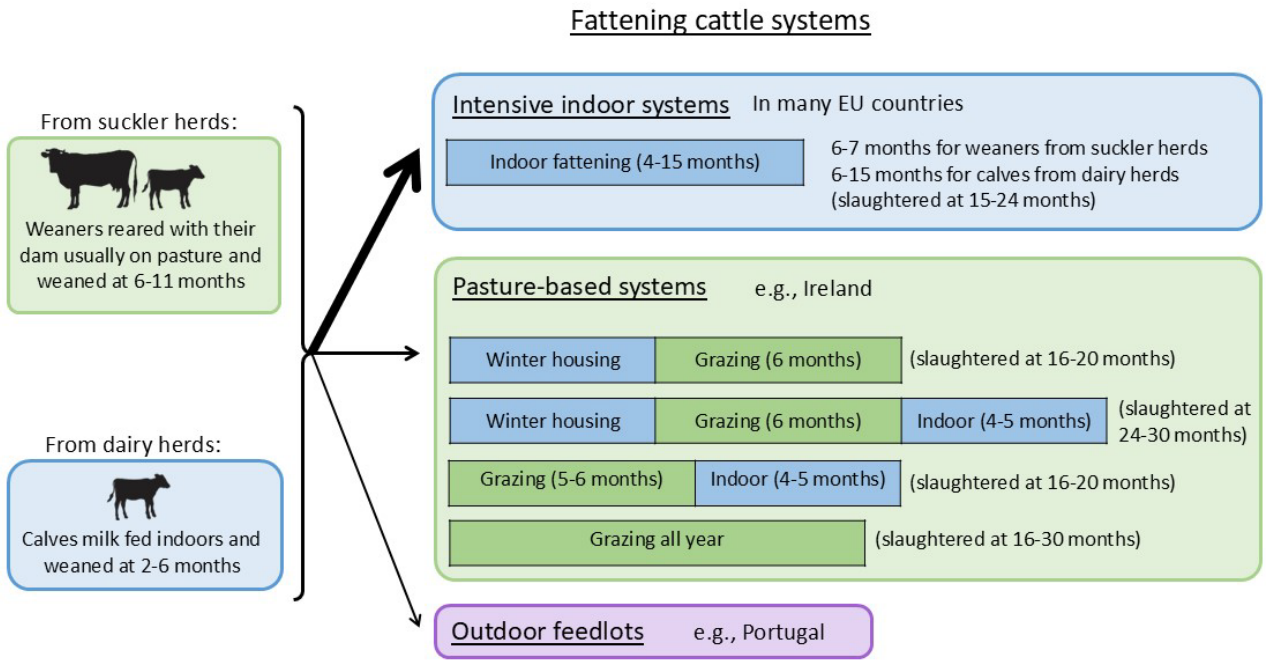


FIGURE 11: Production systems for fattening cattle in the EU. Fattening starts after the weaning phase. Intensive indoor systems are the most prevalent.

Fattening cattle in Europe are primarily reared in intensive indoor systems where they are kept indoors after weaning. These are sometimes known as indoor feedlots (Park et al., 2020 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - Netherlands Food and Consumer Product Safety Authority). Weaners from suckler herds usually enter these indoor systems between 9 and 11 months of age and are fattened for 7–8 months (Gallo et al., 2014) whereas young animals from dairy herds arrive earlier and stay longer (6–15 months) because they are weaned at an earlier age (2–3 months).

Fattening cattle can also be kept on pasture, possibly with supplementary feeding, and housed when necessary. Farms with pasture access are found in regions with a long grazing season such as Ireland (Lawrence et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA), and to a lesser extent in certain regions of Austria (Velik M., Agricultural Research and Education Centre Raumberg-Gumpenstein (Austria), confirmed this by email on 12 April 2024), Poland (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024) and Germany (Deblitz et al., 2008).

In farms with pasture access, spring-born calves from suckler herds go out to pasture again after a first winter indoors. Some cattle are fattened for six months after weaning, but some others can be kept for two grazing seasons and housed for two winters before they are slaughtered. In Ireland, heifers are aimed to be finished at the end of this second summer

consuming grazed grass but can be finished indoors for a few months if grass supply or animal performance is low (EFSA Public call for evidence, 2024 – PC-0742 8 - IFA). Steers are usually kept longer and are finished indoors after this second summer grazing (Ireland: EFSA Public call for evidence, 2024 – PC-0742 8 – IFA) (Austria: Velik M., Agricultural Research and Education Centre Raumberg-Gumpenstein (Austria), confirmed this by email on 12 April 2024) (Finland: Tuomisto et al., 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 11 - MTK). Bulls may return outdoors (EFSA Public call for evidence, 2024 - PC-0742 8 – IFA) but grazing bulls is far less common as bulls have generally been considered as restless grazers with impaired growth at pasture and dangerous behaviours (Nisula and Hakkola, 1979; as cited in: Tuomisto et al., 2015 p. 173, 179; retrieved from EFSA Public call for evidence 2024 - PC-0742 11 - MTK). Occasionally, in places such as Ireland which rely significantly on pasture, fattening cattle are kept during the winter on outwintering pads consisting of outdoor fenced enclosures with wood-chip surfaces on top of stone (Hickey et al., 2002).

Spring-born dairy-beef calves are typically fed milk replacers plus concentrates while housed for the first two months of their lives and are then turned out to pasture in May before being housed again at the end of the grazing season in October (Ireland: Lawrence et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA).

Lastly, fattening cattle can be kept in outdoor feedlots, mostly in Portugal. An outdoor feedlot is an outdoor specialized facility dedicated to the confined feeding of cattle in large pens on compacted earth, aiming to promote rapid weight gain and efficient muscle development for meat production (Figure 12, Figure 13). These facilities are designed to raise large numbers of animals outdoors and are equipped with basic infrastructure such as feed and water troughs. Although some feedlots have a small roofed area over the feed troughs and lying area, shelter is not always provided. The primary objective of a feedlot is to 'finish' the animals, which entails achieving the desired weight and muscle development for slaughter.

While the feedlot model is prevalent in the USA, certain European regions have begun to adopt similar practices in recent years (Eurogroup for Animals, 2020 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Four Paws). For instance, the majority of beef cattle in central and southern Portugal are fattened in outdoor feedlots (Stilwell G., University of Lisbon (Portugal), confirmed this by email on 18 January 2024).

FIGURE 12: Feedlot system in the south of Portugal (© George Stilwell).

FIGURE 13: Feedlot system in the south of Portugal (© George Stilwell).

3.4.3. Breeding bulls

For natural mating, breeding bulls are usually kept with the cows on pasture for 2–3 months during the grazing season (Figure 14) and are then housed during the winter. Similar to suckler cows, breeding bulls spend usually more than six months per year on pasture (Ministère de l'agriculture et de la souveraineté alimentaire, online) and are housed in winter in loose-housing or tie stalls (Dutheil, 2021).

FIGURE 14: Breeding bull on pasture for natural mating (© Teagasc).

Bulls selected for AI, once they reach sexual maturity, are kept in facilities known as 'AI stations' where semen is collected, processed, deep-frozen and subsequently shipped for inseminating cows on farm.

3.4.4. Cull dairy cows

Cull cows are typically slaughtered without any finishing feeding period in some countries such as Denmark (Vestergaard et al., 2007). In other countries, cull cows can be finished before being slaughtered such as Ireland or France (Figure 15). In Ireland, Minchin et al. (2009) estimated that at least 45% of Holstein-Friesian cull cows and 64% of beef-sired cull cows were finished before being sent to slaughter. In France, cull cows are typically finished for three months. When cull cows are finished before being slaughtered, finishing can occur indoors or outdoors (Garcia and Agabriel, 2008).

FIGURE 15: Housing system for cull dairy cows in France (© Luc Mounier).

3.5. Housing in beef cattle production

An overview of the production systems and their association with housing types and outdoor access is provided in Figure 16.

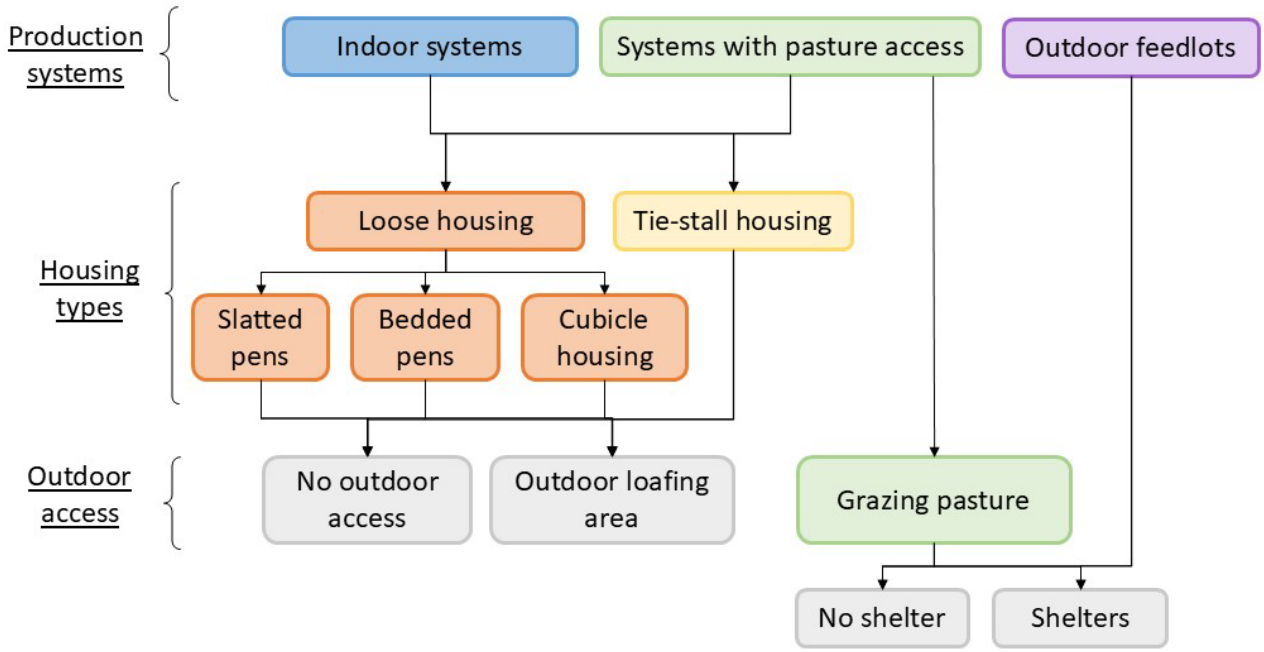


FIGURE 16: Overview of production and housing systems for beef cattle in the EU.

3.5.1. Housing types

In indoor systems and systems with pasture access, housing is needed. For beef cattle, loose housing is mainly used (either slatted-floor pens, bedded pens or cubicle systems), but tie stalls can also be used for suckler cows (to a very limited extent for fattening cattle).

3.5.1.1. Loose-housing

Beef cattle are mostly housed in groups in pens in what is known as loose housing. They are free to move about within the confines of the pen, hence the term loose. Each pen includes a feeding area, access to water and an area where the animals can rest (Figure 17, Figure 18). Each pen in a shed is usually bordered by a steel structure that also incorporates gates or hinged sections that allow the staff to access, and the entry and exit of cattle when needed. The feeding area is found along one side of the rectangular-shaped pen where the cattle access the feed which has been placed outside the pen itself in a feed/access passage. Small cattle sheds might contain as little as one pen. Larger sheds will have multiple pens, often with the pens to the left and right of the central alley of the shed. The central alley usually serves as access and feed passage.

FIGURE 17: Loose housed fattening cattle in a bedded pen in Spain (© Sonia Marti).

FIGURE 18: Fattening cattle housed on straw in Austria (© Christoph Winckler).

Cubicle housing, while more commonly associated with dairy farming, is also sometimes used for suckler cows and, in some regions, for fattening cattle (e.g. Poland and an extremely limited number of farms in Germany and Austria) (Figure 19, Figure 20). This system consists of a shed containing rows of elevated individual stalls or cubicles where animals can lie down whenever they want to (Eurostat, online c). These rows of cubicles are separated by passageways used by the cattle to move around the shed. The cubicles are typically made of concrete, bordered by a steel structure, and often equipped with some type of bed or bedding (e.g. with straw, wood chips or mats) (CIGR, 2004).

FIGURE 19: Fattening cattle in cubicle housing (© Agriland, online).

The elevated cubicles are designed to allow female animals to urinate and defecate into the passageways behind the cubicle. The passageway floors may be slatted or made from solid concrete. Solid concrete floors will then be cleaned by a scraper. Cubicles with straw bedding are avoided for bulls as they urinate on the lying area, but mats can be used with a slope to reduce the dirtiness of the lying area (CIGR, 2004; Schulze Westerath et al., 2006).

FIGURE 20: Suckler cows using cubicles (© Agriland, online).

3.5.1.2. Tie stalls

In tie stalls, animals are tethered (i.e. secured to a fixed point by a rope or chain) in the shed. Tethering is used in two different ways: (a) permanent tethering, where animals are confined year-round, and (b) seasonal tethering, where cattle are tethered during winter but have access to pasture in the summer (Beaver et al., 2021). Tie stalls are sometimes used for suckler cows and are used even less frequently for fattening cattle.

The use of tethering varies across Europe, with different rules depending on the country. For conventional farming, there is no specific EU legislation on tethering, but some countries have decided to ban it, such as Sweden in 2007 or Finland in 2024. In Czechia, permanent tethering is prohibited in new facilities since 2021 and is allowed in existing buildings until 2030[10]. By 2030 in Austria, cattle can be tethered if they can move around at least 90 days per year in loose housing, a paddock or on pasture. The other EU MSs allow tethering sometimes with some requirements to ensure minimum freedom of movement such as in Belgium. See Table 3 for a summary of the regulations in these countries.

For organic farming in the EU, tethering is permitted only in exceptional cases. According to Regulation (EU) 2018/848[11], small-scale farms with up to 50 animals (excluding calves) may be approved to use tie stalls, provided the cows have access to pasture during the grazing season and an outdoor exercise area at least twice per week during the rest of the year. In the Netherlands, tethering is not allowed in organic production and under the Better Life criteria (EFSA Public call for evidence, 2024 – PC-0742 10 – Netherlands Food and Consumer Product Safety Authority).

According to Eurostat (online d), 10,034,610 bovines (other than dairy cows) were permanently or partially tethered in 2020 in the EU. In Austria, 25.4% of farms still use tie stalls for cattle (Statistik Austria, online). In Germany, 10% of cattle were still tethered in 2020, of which 52% are seasonally tethered and 48% are permanently tethered (Statistischen Ämter des Bundes und der Länder, 2021). Currently, tethering remains common in southern Germany, particularly in Bavaria, where it is mostly used for suckler cows. In France, Spain and Italy, fattening cattle are not tethered (EFSA Public call for evidence, 2024 – PC-0742 10 – Association of Veterinary Consultants; EFSA Public call for evidence, 2024 – PC-0742 10 – AOP Italia Zootecnica). In the Netherlands, some small old farms have their animals tethered in winter (~5% of the farms) (EFSA Public call for evidence, 2024 – PC-0742 10 – Netherlands Food and Consumer Product Safety Authority).

[10] Zákon České národní rady na ochranu zvířat proti týrání (Free translation: Act no. 246/1992 on the protection of animals against cruelty). https://mze.gov.cz/public/portal/-q324681---zGhSOPBp/zakon-c-246-1992-sb

[11] Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007. OJ L 150, 14.6.2018, p. 1–92

TABLE 3: Some EU countries that apply specific national regulations regarding tethering.

Country	Status	Regulation details
Sweden	Banned	Permanent tethering is banned and the construction of new buildings with tethering has been prohibited since 2007 (Loberg et al., 2004; Lundmark Hedman et al., 2018)
Finland	Banned	Banned from 2024 with a complete phase-out by 2028. Prohibition of permanent tethering or structures that restrict cattle movement to the point where they cannot turn around
Denmark	Banned	Tethering is prohibited in buildings built after 2010. For older buildings, only dairy cattle can be tethered and if tethered, dairy cattle should have access to pasture at least 150 days per year. Tethering will be fully banned from 2027 [12]
Czechia	Banned (permanent tethering)	The construction of new facilities designed for permanent tethering has been prohibited since 2021. For existing buildings, the use of permanent tethering is permitted until 2030
Austria	Future ban (permanent tethering)	Currently, farms have to indicate if they use permanent tethering to the Competent Authorities. A ban on permanent tethering will come into effect in 2030. From 2030 onwards, tethering is allowed if cattle can move around (in a loose house, a paddock or on pasture) for at least 90 days per year

Tie stalls vary in dimensions (length, width, height), materials used for lying surfaces (e.g. rubber mats), bedding types (e.g. straw, sawdust, or sand) and type of tethering (e.g. neck chain) (reviewed by Beaver et al., 2021). Typically, a dunging passage is situated behind the stalls. The shed design can consist of one or more rows of tie stalls facing each other and divided by a feeding alley (Tarantola et al., 2016).

3.5.2. Shed structures

Generally, there are two main types of sheds: fully enclosed and three-sided sheds.

A fully enclosed shed has walls on all sides (Figure 21). This shed is normally divided into pens, separated by a central passageway for feed distribution and general access. These sheds typically have sloped roofs. The perimeter walls may be partially open, leaving spaces between the walls and the roof to allow for natural ventilation (Figure 22).

[12] BEKENDTGØRELSE nr 1317 af 28/11/2024 Bekendtgørelse om dyrevelfærdsmæssige mindstekrav til hold af kvæg (Ministerial order no 1317 of 28/11/2024. Ministerial order on animal welfare minimum requirements for housing of cattle).

FIGURE 21: Fully enclosed shed (© Agriland, online).

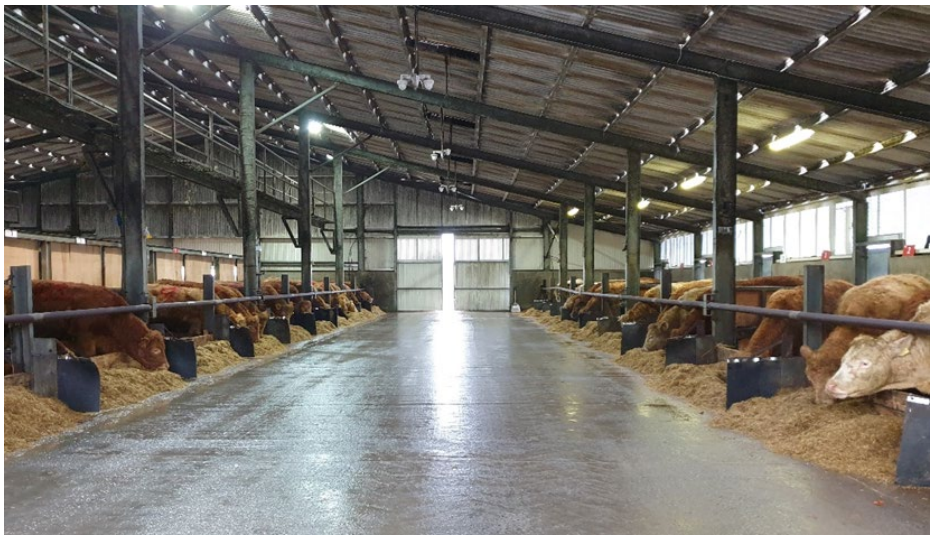


FIGURE 22: Interior of fully enclosed shed featuring access and feed passage (© Teagasc).

Alternatively, a three-sided shed is enclosed on three sides, usually with a single sloping roof covering the pen area. The open side is usually where the feeding area is located, allowing cattle to access feed while providing ventilation through the open wall (Figure 23).

FIGURE 23: Three-sided shed structure (© Agriland, online).

3.5.3. Flooring and bedding

Various housing and flooring types are in use across Europe (Hinterhofer et al., 2006; Cozzi et al., 2013 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - Netherlands Food and Consumer Product Safety Authority; Magrin et al., 2020; McGettigan et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA). The floors can be broadly classified into two main types: concrete slatted floors (CSFs) and solid floors.

Concrete slatted floors (Figure 24, Figure 25) consist of long narrow sections of concrete separated by gaps suspended above tanks or channels, and assist the drainage of liquids and faecal material (CIGR, 2004). Fully slatted concrete floor pens is one of the main housing systems for fattening cattle in Europe (Graunke et al., 2011). In recent years there has been a tendency to cover CSFs with specially constructed slatted rubber mats (RM) to reduce the impact of hard concrete floors on the animals' legs and joints (Figure 26) (Hultgren and Bergsten, 2001 retrieved from EFSA Public call for evidence 2024 - PC-0742 6 - AOP Italia Zootecnica; Earley et al., 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA; Keane et al., 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 6 - IFA; Brscic et al., 2015a; Brscic et al., 2015b; Earley et al., 2017; Keane et al., 2017 retrieved from EFSA Public call for evidence 2024 - PC-0742 6 - AOP Italia Zootecnica; Lowe et al., 2019; Magrin et al., 2019; Lowe et al., 2020; McGettigan et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA).

FIGURE 24: Empty shed with concrete slatted floor (© Agriland, online).

FIGURE 25: Fattening cattle in northern Italy kept in fully slatted floor pens (© Agriland, online).

FIGURE 26: Fattening cattle housed on rubber-covered slatted floor (© Agriland, online).

Solid floors, which are made from concrete, are usually bedded with loose material such as sawdust, straw, wood chips or sand (Lensink et al., 2013) (Figure 27). Among these, straw is the most commonly used bedding material in European cattle housing (Lensink et al., 2013; The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024; EFSA Public call for evidence, 2024 – PC-0742 1 – Belbeef). Wood shavings or sawdust are alternatives in regions where straw is scarce or where cleanliness is prioritised (Brscic et al., 2015a; The Polish Farm Advisory and Training Centre, 2024 confirmed this by email). In most beef cattle pens, the type of flooring is the same throughout the whole pen. However, there are also pens with bare concrete or slatted areas next to the feeding area and a solid bedded area for resting.

FIGURE 27: Steers bedded on straw in Germany (© Thuenen Institute/Jan Brinkmann).

Fully bedded pens can also feature a slope of 8% to 10%. In these bedded sloped floors, the cattle gradually tread straw and manure downwards along the slope. At the lowest point of the

pen, older soiled straw is removed, and fresh straw is added in the higher parts or back of the pen (Schneider, 2020 retrieved from EFSA Public call for evidence 2024 - PC-0742 8 - Eurogroup for animals).

Deep bedding on solid floors is commonly used in more traditional setups. In this system, bedding is added over time and accumulates along with manure, forming a thick layer that is removed only at the end of the housing period or regularly during the fattening period (e.g. every 3 weeks and before the housing of a new batch) (Brscic et al., 2015a).

In fully bedded and deep litter pens the daily usage of straw ranges from 4 to 6 kg per animal (von Deylen, 2020). In suckler cows and calves housing, where lying and walking or feeding areas are separated, 5 to 7 kg of straw per cow-calf pair per day is recommended, with an increase of about 1 kg per day during the calving period. In cases where the lying and feeding areas are combined, it is advised to use 7 to 10 kg of straw per day, rising to 10 to 12 kg per day during the calving season (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024).

3.5.4. Space allowance

There is no set minimum space allowance for housed cattle in European legislation. Across EU MSs, the minimum space allowance requirements vary for beef cattle and sometimes do not exist. See Table 4 for a summary of the information collected during the Public call for evidence held by EFSA in January 2024.

Space allowance for housed fattening cattle depends on the housing type, weight, age and sex of the animals (Table 4). In slatted sheds, the space provided is lower in comparison to bedded pens. In sloped floor pens the lying area is a bit smaller to facilitate the flow of soiled litter to the walking area (e.g. for 600 kg bulls, 2.6 m² per animal is required for sloped pens and 3.1 m² without slope in Belgium). Older (and thus bigger and heavier) animals also require more space. In Belgium, 1 m² extra space per extra 100 kg of body weight is generally provided in bedded pens (and 0.8 m² extra space per extra 100 kg in sloped-floor pens). Lastly, space allowance can differ depending on the sex (e.g. in Belgium heifers are usually given more space than bulls: 3.7 m² for heifers vs. 3.1 m² for bulls in bedded pens without slope). All in all, requirements and recommendations for space allowance per animal reported in the EU vary from 2.4 to 5.5 m² for bedded pens and from 1.8 to 3.2 m² for slatted pens depending on the weight (and age) of cattle (Table 4). Examples of different space allowances across different animal categories housed in slatted or bedded pens are shown in Table 4.

TABLE 4: Space allowance (m² per animal) for fattening cattle of various weights in slatted and bedded sheds in different countries.

Country	Weight (kg)	Slatted pen (m2)	Bedded pen	Reference
Austria	< 350 kg 350–500 kg 500–650 kg > 650 kg	2 m^2 2.4 m^2 2.7 m^2 3 m^2	–	Rechtsinformationssystem des bundes (2025) (minimum requirements)
Belgium	600 kg bull 600 kg heifers	– –	2.6 m^2 (with slope) 3.1 m^2 (without slope) 3.1 m^2 (with slope) 3.7 m^2 (without slope)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)
Finland	200–300 kg 300–400 kg 400–500 kg 500–600 kg 600–700 kg 700 kg	1.8 m^2 2.0 m^2 2.3 m^2 2.5 m^2 3.0 m^2 > 3.2 m^2	3.0 m^2 (solid floor) 3.5 m^2 (solid floor) 4.0 m^2 (solid floor) 4.5 m^2 (solid floor) 5.0 m^2 (solid floor) 5.5 m^2 (solid floor)	EFSA Public call for evidence, 2024 – PC-0742 6 – MTK (recommendation)
Germany	350–600 kg Bull > 600 kg Bull	2.8 m^2 3.0 m^2	3.5–5.0 m^2 3.5-5.0 m^2	EFSA Public call for evidence, 2024 – PC-0742 4 – Landwirtschaftskammer Nordrhein-Westfalen (attachment Stichpunkte und Empfehlungen Bullenmast Übersicht) (recommendation)
Italy	Fattening cattle	3 m^2	4 m^2	EFSA Public call for evidence, 2024 – PC-0742 6– AOP Italia Zootecnica (requirement for the certification scheme National Livestock Quality System)

In cubicle housing systems, the size of the cubicles also needs to be adapted to the size of the animals. In Belgium, cubicle size recommendations vary from 1.5 × 0.75 m for 200 kg cattle to 2.10 × 1.17 m for 600 kg cattle (Table 5).

TABLE 5: Cubicle size for fattening cattle and suckler cows according to body weight in Belgium and in Austria.

Country	Weight	Cubicle size (= length * width)	Reference
Austria	< 300 kg	1.45 m^2 = 1.70 m × 0.85 m (facing another cubicle) 1.62 m^2 = 1.90 m × 0.85 m (facing a wall)	Rechtsinformationssystem des bundes (2025) (minimum requirements)
	300-400 kg	1.90 m^2 = 1.90 m × 1.00 m (facing another cubicle) 2.10 m^2 = 2.10 m × 1.00 m (facing a wall)	
	400-550 kg	2.42 m^2 = 2.10 m × 1.15 m (facing another cubicle) 2.65 m^2 = 2.30 m × 1.15 m (facing a wall)	
	550-700 kg	2.64 m^2 = 2.20 m × 1.20 m (facing another cubicle) 2.88 m^2 = 2.40 m × 1.20 m (facing a wall)	
	> 700 kg	3.00 m^2 = 2.40 m × 1.25 m (facing another cubicle) 3.25 m^2 = 2.60 m × 1.25 m (facing a wall)	
Belgium	***Fattening cattle***		Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)
	75-150 Kg	0.75 m^2= 1.2m × 0.6 m	
	150-250 Kg	1.13 m^2= 1.5 m × 0.75 m	
	250-375 Kg	1.53 m^2= 1.7 m × 0.9 m	
	> 375 Kg	2.31 m^2= 2.1 m × 1.1 m	
	Suckler cows		
	500 Kg	2.37 m^2= 2.01 m × 1.13 m	
	600 Kg	2.46 m2= 2.10 m × 1.17 m	
	700 Kg	2.63 m^2= 2.17 m × 1.21 m	

In suckler cow and calf housing, space allowance can vary from 5 to 12 m² per cow-calf pair depending on the housing type (Table 6).

TABLE 6: Space allowance for housed suckler cows and calves in different housing types and EU countries.

Country	Housing type	Space allowance	Reference
Germany	All types	8–10 m^2 / cow-calf pair	EFSA Public call for evidence, 2024 – PC-0742 4 – Landwirtschaftskammer Nordrhein-Westfalen (attachment Stichpunkte und Empfehlungen Mutterkuhhaltung) (recommendation)
Finland	Resting/lying area	3.5 m^2 / cow calf pair 7 m^2 total area (including manure passage) / cow-calf pair	Finnish Code of Laws (2017) (*requirement*)
Belgium	All types	5–12 m^2 (smaller standards apply for sloping pens)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)
Belgium	Bedded pens	6.5–7 m^2 / cow 1–1.6m^2 / calves (pen of 16 cows)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)

3.5.5. Drinkers

The most commonly used types of drinkers in EU MSs are bowl drinkers (Figure 28) and water troughs/tanks (Figure 29).

Water troughs come in cuboidal or circular shapes that can hold up to hundreds of litres of water. Self-filling troughs are often made from concrete or stainless steel (Figure 29).

In contrast, bowl drinkers are small, holding between 1 and 3 litres of water and are designed to be used by one animal at a time. They are also usually equipped with automatic refill mechanisms or with nose-press (paddle) mechanisms that the cattle activate to release water (Figure 28).

FIGURE 28: Bowl drinker with nose-press (© Thuenen Institute/Jan Brinkmann).

FIGURE 29: Drinking trough (© Trametsberger, BOKU University).

3.5.6. Grooming devices

Fattening cattle are usually kept indoors in barren environments. Occasionally, beef farms provide scratching devices such as brushes (EFSA Public call for evidence, 2024 – PC-0742 11 – Landwirtschaftskammer Nordrhein-Westfalen) (Figure 30). In Germany, fattening cattle of farms labelled "Für Mehr Tierschutz" must be offered grooming opportunities (e.g. rotating brushes, or scrubbing trees) with at least one grooming device per 20 animals (Deutscher Tierschutzbund, 2024 retrieved from EFSA Public call for evidence 2024 - PC-0742 11 - Deutscher Tierschutzbund e.V.).

FIGURE 30: Housed breeding bulls using a brush (© Agriland, online).

3.5.7. Access to outdoor loafing area

In both tie stalls and loose housing, cattle can be provided with an outdoor loafing area (Figure 31). An outdoor loafing area (paddock, outdoor yard) can be defined as an 'open or partly roofed area that is not part of the main structure of the building but is adjacent to it or a short distance away' (EFSA AHAW Panel, 2023b). These areas can be equipped with brushes or with additional feeding or lying areas (Haskell et al., 2013; Smid et al., 2019). The space provided per animal tends to vary greatly among farms (Webb et al., 2001). No data on the prevalence of outdoor loafing areas were available in official statistics.

FIGURE 31: Outdoor loafing area for fattening bulls (© BOKU/Christoph Winckler).

3.5.8. Calving facilities (suckler farms)

The size and features of calving facilities differ across European countries (Table 7). Calving pens (Figure 32) can be designed for an individual cow-calf pair or for a group of cows. An individual calving pen provides between 10 and 15 m^2 per cow (10–14 m² in Poland, 10–15 m² in France, or 12 m² in Germany (on farms with the private label Deutscher Tierschutzbund). In France, individual calving pens are recommended to be placed in well-lit areas adjacent to pens housing other pregnant cows. Group calving pens can provide between 7 and 10 m² per cow (8 m² in Germany, 7 m² if the feeding area is separated from the lying area and 10 m² if both areas are combined in Finland). Calving pens are usually bedded with straw.

FIGURE 32: Calving pen (© Agriland, online).

After the calving period, the calving pen can then be made available for the calves to use (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024). In those systems, selective gates are often used so that only calves can move freely between the calf creep area and other areas (EFSA Public call for evidence, 2024 – PC-0742 12 – Deutscher Tierschutzbund e.V.). Creep feed gates allow calves to access supplemental feed or a separate resting area without competition from adult cows (Figure 33).

FIGURE 33: Calves in deep bedded creep/lie back area featuring creep gate (© Agriland, online).

TABLE 7: Calving pens characteristics in different EU countries

Country	Space allowance	Bedding	Other characteristics	Reference
Poland	Individual pen: 10–14 m² (common practice)	–	–	(The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024)
France	Individual pen: 10–15 m² (recommendation)	–	Pen placed next to other pregnant cows in well-lit areas (recommendation)	IDELE (online a)
Ireland	Group pen: 7 m²/cow if the feeding area separated from the lying area; 10 m²/cow if both areas are combined (requirement)	Straw bedding (recommendation)	Calving areas should accommodate 10% of the herd (recommendation)	EFSA Public call for evidence, 2024 – PC-0742 12 – IFA
Germany	Individual pen: 12 m² Group pen: 8 m²/cow (private welfare label)	Straw bedding (private welfare label)	–	EFSA Public call for evidence, 2024 – PC-0742 12 – Deutscher Tierschutzbund e.V (attachment calving facilities)

3.6. Nutrition and feeding

Feeding strategies can vary according to management factors and farm preferences.

3.6.1. Suckler cows

Suckler cows and heifers are mainly kept on farms with pasture access during the grazing season and are housed during the winter (see Section 3.4.1), when they are usually placed on a forage-only diet.

During the grazing period, usually from spring to autumn (April to October), suckler cows/heifers graze on pastures in groups. Typically, no supplementary feeding is provided (EFSA Public call for data, 2024 – PC-0742 8 – Czech Beef Cattle Association; EFSA Public call for evidence – PC-0742 8 – IFA). For example, in France 95% of suckler herds spend more than six months per year on pasture without supplemental feeding when weather conditions are favourable (Ministère de l'agriculture et de la souveraineté alimentaire, online). Supplementation, when necessary—typically to compensate for forage deficits on poorer quality grasslands and/or due to water shortages (e.g. drought periods or dry regions in southern France)—is generally based on preserved fodder such as hay (grass or legume hay) or silage (Dutheil, 2021). This supplementary feed is usually provided towards the end of gestation and early lactation (Dutheil, 2021). Additionally, animals can receive mineral supplements (Velik M., Agricultural Research and Education Centre Raumberg-Gumpenstein (Austria), confirmed this by email on 12 April 2024).

During winter (i.e. approximately from November to March), when the cows are housed, the most common feed is grass silage (EFSA Public call for evidence, 2024 – PC-0742 8 – Czech Beef Cattle Association; EFSA Public call for evidence – PC-0742 8 – IFA). The diet can also

include maize silage, or hay (Van der Peet et al., 2018 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; Hohnholz et al., 2019; The Polish Farm Advisory and Training Centre, 2024 confirmed this by email), only or with a limited amount of concentrates when suckler cows approach calving (BFA et al., 2021 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef). For example, in Spain it is common to provide 7, 9, and 12 kg fresh matter/day of straw, hay, or silage, respectively, along with ~2 kg/day of concentrate pellets (Marti S., IRTA (Spain), confirmed this by email on 10 May 2024).

The feeding regime can be adjusted according to the animal's body condition. During late gestation, body condition is maintained using hay or maize silage, supplemented with minerals to support foetal development. Post-calving, lactating cows might be fed rations higher in energy and protein by feeding silage, and potentially supplemented with concentrates depending on forage quality, along with access to lactation-specific mineral mixes. During the dry period, the main feed shifts to high-quality roughage to prevent excessive weight gain. Pre-mating strategies aim to restore cows to optimal body condition, utilising pasture grazing supplemented with silage or hay as necessary, with some cows potentially requiring extra concentrates (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024).

Thus, feeding strategies also depend on when the cows calve. Spring calving requires minimal feed supplementation as the cows' peak lactation period is synchronized with the peak of grass growth (Dutheil, 2021; Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA). However, the feeding management of autumn-calving cows is more complicated because of the need to support cows' peak lactation period with winter rations (Allen, 2004). The most cost-effective strategy involves providing high-quality feed to the cow during the early months until pregnancy is securely established (Allen, 2004).

Before being slaughtered, cull suckler cows can be fattened either on grass potentially supplemented with cereal and protein supplements or indoors with preserved forage and supplements (Dutheil, 2021).

3.6.2. Suckler calves

Suckler calves are reared by their dam, and as such they can suckle freely until weaning. The growth of suckling calves primarily depends on the dams' milk production.

From the second or third week of life, calves progressively start to consume solid feed besides suckling their dam (Teagasc, online c). From the sixth or seventh week of age, calves enter a transition phase where their intake of the mother's milk is gradually reduced while solid feed consumption continues to increase (Teagasc, online c). This phase continues until the calves are fully weaned, typically around 6 to 11 months of age. Solid feed consists of small amounts of forage such as grass, silage, high-quality hay or chopped straw or possibly a specialised calf starter concentrate feed, typically grain-based (Department Landbouw en Visserij, 2013 retrieved from EFSA Public call for evidence 2024 - PC-0742 8 - Belbeef; Marti S., 2024 confirmed this by email; Velik M., 2024 confirmed this by email; La Viande, online) (EFSA Public call for evidence, 2024 – PC-0742 8 – MTK). The amount of concentrate given depends on the quantity of roughage available. The concentrate feed typically comprises a variety of feed materials, including e.g. flaked maize, puffed wheat, and alfalfa, and it can be administered in various forms such as granules, flakes, mash, or pellets.

On suckler farms with pasture access, which is most often the case, calves born in spring spend a grazing season of up to 7–8 months with access to milk from their dam and grazed grass (Dutheil, 2021; Lawrence et al., 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 5 - IFA). However, supplementary feeding with forage and/or concentrates can become

necessary from late summer onwards to sustain daily weight gain as grass growth and quality decline (Allen, 2004). Additional concentrates can be provided on pasture, sometimes along with minerals supplements (EFSA Public call for evidence, 2024 – PC-0742 8 – Czech Beef Cattle Association).

During winter housing of autumn-born suckler calves, grass silage is the most common supplementary feed (EFSA Public call for evidence, 2024 – PC-0742 8 – Czech Beef Cattle Association; EFSA Public call for evidence, 2024 – PC-0742 8 – IFA). Hay can also be provided in the diet of suckler calves. Supplementary feeding during housing is important for ensuring adequate nutrition and supporting growth, especially for calves born in autumn, which are housed at a young age compared to spring-born calves that spend their first 6-8 months outdoors. The most cost-effective feeding strategy for autumn calving as they approach weaning involves increasingly relying on designated creep feeding areas (Allen, 2004) that provide calves with access to concentrates and forages without competition from adult cows (Earley, 2022 retrieved from EFSA Public call for evidence 2024 - PC-0742 3 - IFA) (Figure 32, Figure 33).

3.6.3. Fattening cattle

Fattening cattle undergo two main production phases: growing and finishing. During the growing phase, fibre-rich diets containing higher fibre levels than in the finishing phase are initially provided to maintain rumen function, and protein-rich diets are then given to promote muscle development. During the finishing phase, the cattle are fed energy-rich diets with high amounts of concentrates to promote fat deposition and improve meat quality. In Belgium, for example, the growing phase diet comprises 75% roughage (grass/corn silage) and 25% concentrates. In the finishing phase, the concentrate quantity increases, with 1 kg of concentrate provided on average per 100 kg of body weight daily (EFSA Public call for evidence, 2024 - PC-0742 1– Belbeef).

Feeding regimes vary across countries, adapting to local resources, economic considerations, and desired growth rates.

Fattening feeds commonly include silage with concentrates (often *ad libitum*) for both dairy-bred and suckler-bred cattle, as these feeds provide high-energy rations that facilitate rapid weight gain (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024). Depending on the region, silage provided can be maize silage (e.g. in Germany, Poland, France, Austria, the Netherlands, Belgium, Italy), grass silage (e.g. Ireland, the Netherlands, Belgium) (Bos, 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; Van der Peet et al., 2018 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; The Polish Farm Advisory and Training Centre, 2024 confirmed this by email) or a combination of both. The diet for fattening cattle can also include by-products such as brewers' grain, distillers' grain, pressed beet slices, beet pulp, bran, molasses and potato pulp depending on availability such as in Germany, the Netherlands, Italy or in the north of France for beet pulp (Bos, 2015 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; Van der Peet et al., 2018 retrieved from EFSA Public call for evidence 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; La Viande, online).

In southern Europe, hay and straw are mainly used as roughage, such as in Italy or Spain (EFSA Public call for data, 2024 – PC-0742 8 – AOP Italia Zootecnica). In Spain, the primary feeding model for fattening cattle involves an *ad libitum* provision of concentrates and straw. For suckler calves, fattening begins with more fibrous feeds, gradually introducing growth or fattening concentrates, which are primarily composed of cereals at 70–80%, mainly maize, barley, oats

and wheat (EFSA Public call for data, 2024 – PC-0742 8 – Association of Veterinary Consultants). The concentrates also include a protein base with soybean (44% of soybean), sunflower meal, dried distillers' grains, or gluten feed, a fibrous base consisting of soybean hulls, wheat bran, oat hulls, or beet pulp and a source of oils such as soybean, palm, hydrogenated fats or calcium soap. The feed is supplemented with macro- and micro-minerals, vitamins and trace elements. Buffers containing sodium bicarbonate and magnesium oxide are also included (EFSA Public call for data, 2024 – PC-0742 8 – Association of Veterinary Consultants). Concentrates and straw are theoretically consumed in a ratio close to 90:10 on a dry matter basis (Ferret Quesada, 2023).

Two primary feeding techniques are employed for delivering these diets: TMR and 'separate feeding'. The TMR technique, widely used across Europe in countries like Italy, Poland, Germany, and Finland, involves mixing all feed ingredients into a single, homogenous ration, aiming for each bite to contain a balanced proportion of nutrients.

Typical TMR components include on farm forages, grains, protein supplements, minerals, vitamins, industry by-products, and locally sourced starch-rich feeds (Huuskonen et al., 2020 retrieved from EFSA Public call for evidence 2024 - PC-0742 8 - MTK; Pesonen, 2020). The diet includes a mineral-vitamin supplement and protein sources like soybean and/or rapeseed meals.

- In Italy, cereals constitute more than 60% of the dry matter in TMR diets, ensuring ruminal health through adequate Neutral Detergent Fiber (NDF) content (EFSA Public call for evidence, 2024 – PC-0742 8 – AOP Italia Zootecnica).
- In Finland, a typical TMR diet consists of 60% silage and 40% concentrates on a dry matter basis (Huuskonen et al., 2020 retrieved from EFSA Public call for evidence 2024 - PC-0742 8 - MTK; Pesonen, 2020).

Conversely, the separate feeding technique provides different diet components separately. Through separate feeding, different feeds are often provided in specific amounts at different times. For example, forage (like hay or silage) might be fed separately from concentrates or grains.

In outdoor fattening systems, the aim is to efficiently use grasslands with minimal supplementation. In Austria, pasture fattened steers are supplemented with 13 kg of concentrates on grasslands during the fattening phase before being housed for finishing (Velik M., Agricultural Research and Education Centre Raumberg-Gumpenstein (Austria), confirmed this by email on 12 April 2024). In Poland, farms utilise rotational grazing with minimal supplementation (The Polish Farm Advisory and Training Centre, confirmed this by email on 18 February 2024). In Ireland, heifers and bulls are also supplemented with concentrates on pasture. When fattening animals are housed for a second winter (steers and some heifers), they are finished on a diet of grass silage and concentrate (EFSA Public call for evidence, 2024 – PC-0742 8 – IFA).

When fattening cattle on grass, the feeding strategy depends also on other factors such as grass growth and animal performance. For example, in Ireland, heifers are usually finished at the end of their second summer consuming grass plus 2–3 kg of concentrate. If grass supply or animal performance are low, they can return indoors for 60–90 days and be finished on grass silage and concentrates (EFSA Public call for evidence, 2024 – PC-0742 8 – IFA).

3.6.4. Breeding bulls

The diet of breeding bulls is important to support their growth, help achieve sexual maturity and maintain a suitable fertility.

During the breeding season, bulls used for natural mating have significantly higher nutrient requirements compared to off-season due to their increased activity levels. The rise of their energy and protein demands often leads to a loss of body condition. After the breeding season, bulls are managed to gradually restore their body condition (Smith, 2023).

3.6.5. Cull dairy cows

Cull dairy cows can be sent directly to slaughter or undergo a finishing period beforehand. When finished before slaughter, finishing occurs either indoors with forage and/or concentrates or outdoors on high-quality pasture (Garcia and Agabriel, 2008), possibly with supplementation. Cull cows that are fattened can receive a similar ration as fattening cattle (in Belgium: 1 kg of concentrates per 100 kg of body weight, PC-0742 1– Belbeef).

4. Conclusions

This report outlines the husbandry systems utilized for beef cattle in the EU, covering suckler cows, fattening cattle, breeding bulls, and cull dairy cows. It details the population of beef cattle, housing conditions, as well as nutrition and feeding practices for each category of animal. The impact of these farming practices on the welfare of beef cattle is discussed in a separate EFSA publication (EFSA AHAW Panel, 2025).

Abbreviations

AHAW	Animal Health and Welfare
AI	Artificial Insemination
CSF(s)	Concrete slatted floor(s)
EC	European Commission
MS(s)	Member State(s)
NDF	Neutral Detergent Fiber
RM	Rubber mats
SO	Scientific Opinion
TMR	Total Mixed Ration
ToR(s)	Term(s) of Reference

References

Agethen K, Davier Zv, and Efken J, 2023. Steckbriefe zur Tierhaltung in Deutschland: Mastrinder Braunschweig. 15 pp. Available online: https://literatur.thuenen.de/digbib_extern/dn067507.pdf retrieved from EFSA Public call for evidence, 2024 - PC-0742 2 submitted by Eurogroup for Animals

Agriland, online. Available online: https://www.agriland.ie/ [Accessed on 21 February 2025]

Allen DM, 2004. Suckler Herds. In: Bovine Medicine: Diseases and Husbandry of Cattle. 2nd Edition. Blackwell Science Publishing. Oxford, UK.

Anagrafe Nazionale Zootecnica. (2024a). *Dettaglio consistenza bovini*. https://www.vetinfo.it/j6_statistiche/#/report-pbi/11 retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 submitted by AOP Italia Zootecnica

Anagrafe Nazionale Zootecnica. (2024b). *Consistenza allevamenti e capi bovini e bufalini*. https://www.vetinfo.it/j6_statistiche/#/report-pbi/1 retrieved from EFSA Public call for evidence, 2024 - PC-0742 2 submitted by Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna

ASOPROVAC, 2024. 9 February 2024. E-mail.

Beaver A, Weary DM, and von Keyserlingk MAG, 2021. Invited review: The welfare of dairy cattle housed in tiestalls compared to less-restrictive housing types: A systematic review. Journal of dairy science; 104(9), pp. 9383–9417. https://doi.org/10.3168/jds.2020-19609

BFA, AgroFront, FEBEU, and Comeos, 2021. Belbeef standaard. Available online: https://www.vegaplan.be/storage/uploads/files/modules/documents/file/1667558668_Dv0YDc7G2Z5AaHpJV0WNsh0AO5eoT1Q9A2qNmVvM.pdf retrieved from EFSA Public call for evidence, 2024 - PC-0742 4 submitted by Belbeef

Bos A, 2015. De relatieve duurzaamheid van de Nederlandse roodvleessector: een kwalitatieve vergelijking. A comparative study on the sustainability of the Dutch beef cattle production sector. Livestock research report. Wageningen UR Livestock Research, Wageningen. 841, 68 pp. Available online: https://edepot.wur.nl/333628 retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 submitted by Netherlands Food and Consumer Product Safety Authority

Brscic M, Gottardo F, Tessitore E, Guzzo L, Ricci R, and Cozzi G, 2015a. Assessment of welfare of finishing beef cattle kept on different types of floor after short- or long-term housing. Animal; 9(6), pp. 1053–1058. https://doi.org/10.1017/S1751731115000245

Brscic M, Ricci R, Prevedello P, Lonardi C, De Nardi R, Contiero B, Gottardo F, and Cozzi G, 2015b. Synthetic rubber surface as an alternative to concrete to improve welfare and performance of finishing beef cattle reared on fully slatted flooring. Animal; 9(8), pp. 1386–1392. https://doi.org/10.1017/S1751731115000592

Bundesanstalt für Landwirtschaft und Ernährung. (2025). *Rinderbestände nach Nutzungsrichtung und Rinderrassen*. https://www.bmel-statistik.de/fileadmin/daten/3100920-0000.xlsx

Bundesministerium für Ernährung und Landwirtschaft, online. Rinderhaltung. Available online: https://www.bmel-statistik.de/landwirtschaft/tierhaltung/rinderhaltung [Accessed on 05 March 2025]

Chiumia D, Chagunda MGG, Macrae AI, and Roberts DJ, 2013. Predisposing factors for involuntary culling in Holstein–Friesian dairy cows. Journal of dairy research; 80(1), pp. 45–50. https://doi.org/10.1017/S002202991200060X

CIGR, 2004. Design Recommendations of Beef Cattle Housing. Report of the CIGR Section II, Working Group No. 14, Cattle Housing. East Lansing, Michigan, USA. 2nd Edition, 54 pp. Available online: https://raumberg-gumpenstein.at/jdownloads/sonst_Tagung/1998_IGN_Workshop/3i_2004_cigrgesamt.pdf

Clarke P, online. Winter facilities pp. 143–156 Available online: https://www.teagasc.ie/media/website/animals/dairy/WinterFacilities.pdf retrieved from EFSA Public call for evidence 2024 - PC-0742 6 submitted by IFA

Coopman F, de Smet S, Gengler N, Haegeman A, Jacobs K, van Poucke M, Laevens H, van Zeveren A, and Groen AF, 2003. Estimating internal pelvic sizes using external body measurements in the double-muscled Belgian Blue beef breed. Animal Science; 76(2), pp. 229–235. https://doi.org/10.1017/S1357729800053480

Council of Europe, online. Recommendation concerning Cattle adopted by the Standing Committee of the European Convention for the Protection of Animals kept for Farming Purposes (T-AP) on 21 October 1988. Available online: https://www.coe.int/en/web/cdcj/1988-rec-cattle [Accessed on 7 March 2024]

Cozzi G, Tessitore E, Contiero B, Ricci R, Gottardo F, and Brscic M, 2013. Alternative solutions to the concrete fully-slatted floor for the housing of finishing beef cattle: Effects on growth performance, health of the locomotor system and behaviour. The Veterinary Journal; 197(2), pp. 211–215. https://doi.org/10.1016/j.tvjl.2013.03.001 retrieved from EFSA Public call for evidence, 2024 - PC-0742 5 submitted by Netherlands Food and Consumer Product Safety Authority

D'Alteroche F, 2013. Le taureau reste au coeur des ébats. Réussir Bovins viande. Available online: https://www.reussir.fr/bovins-viande/le-taureau-reste-au-coeur-des-ebats [Accessed on 7 April 2025]

Dallago GM, Wade KM, Cue RI, McClure JT, Lacroix R, Pellerin D, and Vasseur E, 2021. Keeping Dairy Cows for Longer: A Critical Literature Review on Dairy Cow Longevity in High Milk-Producing Countries. Animals; 11(3), p. 808. https://doi.org/10.3390/ani11030808

Deblitz C and Zavyalova K, 2024. Steckbriefe zur Tierhaltung in Deutschland: Mastrinder. Thünen-Institut für Betriebswirtschaft, Braunschweig. 15 pp. Available online: https://www.thuenen.de/media/ti-themenfelder/Nutztierhaltung_und_Aquakultur/Haltungsverfahren_in_Deutschland/Rindermast/Steckbrief_Mastrinder_2024.pdf

Deblitz C, Brommer J, and Bruggemann D, 2008. Beef production in Germany-production systems and their spatial distribution. Landbauforschung Volkenrode; 58(1/2), pp. 29–44. https://literatur.thuenen.de/digbib_extern/bitv/dk039990.pdf

Department Landbouw en Visserij, 2012. Huisvesting van vleesvee. pp. 104 Available online: https://publicaties.vlaanderen.be/view-file/38100 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 submitted by Belbeef

Department Landbouw en Visserij, 2013. Voeding van runderen van het belgisch witblauwe ras. pp. 84 Available online: https://publicaties.vlaanderen.be/view-file/13227 retrieved from EFSA Public call for evidence, 2024 - PC-0742 8 submitted by Belbeef

Deutscher Tierschutzbund, 2024. Richtlinie Mast von Kalbern und Rindern aus Milchkuhbetrieben. Kriterienkatalog fur die Haltung von Kalbern und Rindern. Deutscher Tierschutzbund, 31 pp. Available online: https://www.tierschutzlabel.info/fileadmin/users/redakteur/redakteur_upload/Mastrinder/2025/Richtlinie_Mast_von_Kaelbern_und_Rindern_2025 pdf retrieved from EFSA Public call for evidence, 2024 - PC-0742 11 submitted by Deutscher Tierschutzbund e.V.

Devienne S, Garambois N, Mischler P, Perrot C, Dieulot R, and Falaise D, 2016. Les exploitations d'élevage herbivore économes en intrants (ou autonomes): quelles sont leurs caractéristiques? Comment accompagner leur développement? 165 pp. Available online: https://agriculture.gouv.fr/les-exploitations-delevage-herbivore-economes-en-intrants-ou-autonomes-quelles-sont-leurs

Diers S, Heise J, Krebs T, Groenewold J, and Tetens J, 2020. Effect of sexed semen on different production and functional traits in German Holsteins. Veterinary and Animal Science; 9, pp. 100101. https://doi.org/10.1016/j.vas.2020.100101

Dutheil L-M, 2021. Préparation des jeunes bovins à la période d'engraissement: résultats d'une analyse intégrative à partir d'un essai réalisé en France. Master Thesis, Médecine vétérinaire et santé animale, Université de Toulouse, France. 229 pp. https://dumas.ccsd.cnrs.fr/dumas-04096098v1

Earley B, 2022. Beef cattle and veal calves. In: Management and Welfare of Farm Animals: The UFAW Farm Handbook. 6th. Webster J & Margerison J, Wiley. UK. 592 p. -

https://www.ufaw.org.uk/ufaw-wiley-blackwell-animal-welfare-series/management-and-welfare-of-farm-animals-the-ufaw-farm-handbook-6th-edition- retrieved from EFSA Public call for evidence, 2024 - PC-0742 3 submitted by IFA

Earley B, McDonnell B, and O'Riordan EG, 2015. Effect of floor type on the performance, physiological and behavioural responses of finishing beef steers. Acta Veterinaria Scandinavica; 57(1), pp. 73. https://doi.org/10.1186/s13028-015-0162-7 retrieved from EFSA Public call for evidence, 2024 - PC-0742 5 submitted by IFA

Earley B, McNamara JD, Jerrams SJ, and O'Riordan EG, 2017. Effect of concrete slats, three mat types and out-wintering pads on performance and welfare of finishing beef steers. Acta Veterinaria Scandinavica; 59(1), pp. 34. https://doi.org/10.1186/s13028-017-0302-3

EFSA (European Food Safety Authority), online a. Stakeholder meeting on the welfare of beef cattle and turkeys: farming practices and data. Available online: https://www.efsa.europa.eu/en/events/stakeholder-meeting-welfare-beef-cattle-and-turkeys-farming-practices-and-data [Accessed on 20 January 2025]

EFSA (European Food Safety Authority), online b. Call for evidence - Welfare of beef cattle on farm. Available online: https://open.efsa.europa.eu/consultations/a0cTk00000024kHIAQ [Accessed on 17 January 2025]

EFSA Panel on Animal Health and Welfare (AHAW); Scientific Opinion on the welfare of cattle kept for beef production and the welfare in intensive calf farming systems. EFSA Journal 2012; 10(5):2669, 166 pp. https://doi.org/10.2903/j.efsa.2012.2669

EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Canali E, Drewe JA, Garin-Bastuji B, Gonzales Rojas JL, Gortazar Schmidt C, Herskin M, Michel V, Miranda Chueca MA, Padalino B, Pasquali P, Roberts HC, Spoolder H, Stahl K, Velarde A, Viltrop A, Jensen MB, Waiblinger S, Candiani D, Lima E, Mosbach-Schulz O, Van der Stede Y, Vitali M, & Winckler C, 2023a. Scientific Opinion on the welfare of calves. EFSA Journal 2023; 21(3):7896, 197 pp. https://doi.org/10.2903/j.efsa.2023.7896

EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Canali E, Drewe JA, Garin-Bastuji B, Gonzales Rojas JL, Gortázar Schmidt C, Herskin M, Michel V, Miranda Chueca MÁ, Padalino B, Roberts HC, Spoolder H, Stahl K, Velarde A, Viltrop A, De Boyer des Roches A, Jensen MB, Mee J, Green M, Thulke H-H, Bailly-Caumette E, Candiani D, Lima E, Van der Stede Y, & Winckler C, 2023b. Scientific Opinion on the welfare of dairy cows. EFSA Journal 2023; 21(5):7993, 177 pp. https://doi.org/10.2903/j.efsa.2023.7993

EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Boklund A, Dippel S, Dorea F, Figuerola J, Herskin M, Michel V, Miranda Chueca MÁ, Nannoni E, Nonno R, Riber AB, Stahl K, Stegeman JA, Thulke H-H, Tuyttens F, Cozzi G, Knierim U, Marti S, Mullan S, Ashe S, Cecchinato G, Lima E, Mosbach-Schulz O, Van der Stede Y, Vitali M, Zanna MB, & Winckler C, 2025. Scientific Opinion on the welfare of cattle kept for beef production. EFSA Journal 2025 https://doi.org/10.2903/j.efsa.2025.9518

EU-SCAHAW (Scientific Committee on Animal Health and Animal Welfare), 2001. The Welfare of Cattle kept for Beef Production. SANCO.C.2/AH/R22/2000. Available online: https://food.ec.europa.eu/system/files/2020-12/sci-com_scah_out54_en.pdf

Eurogroup for Animals, 2020. The welfare of cattle finished on feedlots. Available online: https://www.eurogroupforanimals.org/files/eurogroupforanimals/2021-12/2020_12_eurogroup_for_animals_cattle_feedlots.pdf retrieved from EFSA Public call for evidence, 2024 - PC-0742 4 submitted by Four Paws

Eurostat, 2020. Handbook on the concepts and definitions used in Animal Production Statistics. Available online: https://ec.europa.eu/eurostat/cache/metadata/Annexes/apro_anip_esms_an_6.pdf

Eurostat, online a. Bovine population - annual data. Available online: https://ec.europa.eu/eurostat/databrowser/view/apro_mt_lscatl$defaultview/default/table?lang=en [Accessed on 26 December 2024]

Eurostat, online b. Slaughtering in slaughterhouses - annual data. Available online: https://ec.europa.eu/eurostat/databrowser/product/page/APRO_MT_PANN [Accessed on 26 December 2024]
Eurostat, online c. Glossary: Cattle housing - loose housing. Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Cattle_housing_-_loose_housing [Accessed on 07 April 2025]
Eurostat, online d. Animal housing by type of bovine, utilised agricultural area, size classes of livestock units and NUTS 2 region. Available online: https://ec.europa.eu/eurostat/databrowser/view/ef_ah_bovine__custom_13999836/default/table [Accessed on 26 December 2024]
Ferret Quesada A. (2023). Relación entre la alimentación, el comportamiento de alimentación y el bienestar de los terneros en cebo. *Interempresas*. https://www.interempresas.net/Ganadero/Articulos/475251-Relacion-entre-alimentacion-comportamiento-alimentacion-bienestar-terneros-cebo.html
Decree of the Ministry of Agriculture and Forestry on the construction technical and functional requirements for beef cattle buildings for subsidized construction, (2017). https://www.finlex.fi/fi/lainsaadanto/saadoskokoelma/2017/406
Gallo L, De Marchi M, and Bittante G, 2014. A Survey on Feedlot Performance of Purebred and Crossbred European Young Bulls and Heifers Managed Under Intensive Conditions in Veneto, Northeast Italy. Italian Journal of Animal Science; 13(4), pp. 3285. https://doi.org/10.4081/ijas.2014.3285
Garcia F and Agabriel J, 2008. CompoCow: a predictive model to estimate variations in body composition and the energy requirements of cull cows during finishing. The Journal of Agricultural Science; 146(3), pp. 251–265 https://doi.org/10.1017/S002185960800779X
Google Translate, online. Available online: https://translate.google.com/ [Accessed on 13 March 2025]
Graunke KL, Telezhenko E, Hessle A, Bergsten C, and Loberg JM, 2011. Does rubber flooring improve welfare and production in growing bulls in fully slatted floor pens? Animal Welfare; 20(2), pp. 173–183. https://doi.org/10.1017/S0962728600002657
Hadley G, Wolf C, and Harsh S, 2006. Dairy cattle culling patterns, explanations, and implications. Journal of dairy science; 89(6), pp. 2286–2296. https://doi.org/10.3168/jds.S0022-0302(06)72300-1
Haskell MJ, Masłowska K, Bell DJ, Roberts DJ, and Langford FM, 2013. The effect of a view to the surroundings and microclimate variables on use of a loafing area in housed dairy cattle. Applied Animal Behaviour Science; 147(1–2), pp. 28–33. https://doi.org/10.1016/j.applanim.2013.04.016
Hickey MC, French P, and Grant J, 2002. Out-wintering pads for finishing beef cattle: animal production and welfare. Animal Science; 75(3), pp. 447–458. https://doi.org/10.1017/S1357729800053212
Hinterhofer C, Ferguson JC, Apprich V, Haider H, and Stanek C, 2006. Slatted Floors and Solid Floors: Stress and Strain on the Bovine Hoof Capsule Analyzed in Finite Element Analysis. Journal of dairy science; 89(1), pp. 155–162. https://doi.org/10.3168/jds.S0022-0302(06)72079-3
Hohnholz T, Volkmann N, Gillandt K, Waßmuth R, and Kemper N, 2019. Risk Factors for Dystocia and Perinatal Mortality in Extensively Kept Angus Suckler Cows in Germany. Agriculture; 9(4), pp. 85. https://doi.org/10.3390/agriculture9040085
Holden SA and Butler ST, 2018. Review: Applications and benefits of sexed semen in dairy and beef herds. Animal; 12(s1), pp. s97–s103. https://doi.org/10.1017/S1751731118000721
Hörz M. (2019). Masse statt Klasse in deutschen Ställen. *Süddeutsche Zeitung*. Available online: https://www.sueddeutsche.de/wirtschaft/rinderhaltung-deutschland-zahlen-1.4682585 retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 submitted by Four Paws

Hultgren J and Bergsten C, 2001. Effects of a rubber-slatted flooring system on cleanliness and foot health in tied dairy cows. Preventive Veterinary Medicine; 52(1), pp. 75–89. https://doi.org/10.1016/S0167-5877(01)00237-9 retrieved from EFSA Public call for evidence, 2024 - PC-0742 6 submitted by AOP Italia Zootecnica

Huuskonen AK, Jaakkola S, and Manni K, 2020. Intake, gain and carcass traits of Hereford and Charolais bulls offered diets based on triticale, barley and grass silages. Agricultural and Food Science; 29(4), pp. 318–330. https://doi.org/10.23986/afsci.89813 retrieved from EFSA Public call for evidence 2024 - PC-0742 8 submitted by MTK

IDELE (Institut de l'élevage), online a. Des veaux allaitants en bonne santé. Available online: https://idele.fr/detail-article/des-veaux-allaitants-en-bonne-sante [Accessed on 13 March 2025]

IDELE (Institut de l'élevage), online b. Bilan des inséminations animales bovines en semence sexée, campagne 2022. Available online: https://idele.fr/detail-article/bilan-des-inseminations-animales-bovines-en-semence-sexee-campagne-2022 [Accessed on 07 April 2025]

ISMEA (Istituto di Servizi per il Mercato Agricolo Agroalimentare), online. Scheda di settore - Bovino da carne. Available online: https://www.ismeamercati.it/flex/files/1/b/f/D.f616c5c043d9d7017e3e/SchedaBovino_2024__giugno_.pdf [Accessed on 05 February 2025]

Iwanowska A and Pospiech E, 2010. Comparison of slaughter value and muscle properties of selected cattle breeds in Poland–Review. Acta Scientiarum Polonorum Technologia Alimentaria; 9(1), pp. 7–22.

Johnson MZ. (2023). Bull to Female Ratios: Prepare for Breeding Season. *Drovers*. https://www.drovers.com/news/beef-production/bull-female-ratios-prepare-breeding-season

Keane MP, McGee M, O'Riordan EG, Kelly AK, and Earley B, 2015. Effect of floor type on hoof lesions, dirt scores, immune response and production of beef bulls. Livestock Science; 180, pp. 220–225. https://doi.org/10.1016/j.livsci.2015.08.002 retrieved from EFSA Public call for evidence, 2024 - PC-0742 6 submitted by IFA

Keane MP, McGee M, O'Riordan EG, Kelly AK, and Earley B, 2017. Effect of space allowance and floor type on performance, welfare and physiological measurements of finishing beef heifers. Animal; 11(12), pp. 2285–2294. https://doi.org/10.1017/S1751731117001288 retrieved from EFSA Public call for evidence, 2024 - PC-0742 6 submitted by AOP Italia Zootecnica

Khangura S, Konnyu K, Cushman R, Grimshaw J, and Moher D, 2012. Evidence summaries: the evolution of a rapid review approach. Systematic Reviews; 1(1), pp. 10. https://doi.org/10.1186/2046-4053-1-10

Kostusiak P, Puppel K, Kunowska-Slósarz M, Slósarz J, Gołębiewski M, Grodkowski G, Stolarczyk P, Wisniewski K, and Przysucha T, 2019. Beef cattle breeds in Poland. Annals of Warsaw University of Life Sciences-SGGW. Animal Science; 58(4), pp. 261–277. https://doi.org/10.22630/AAS.2019.58.4.26

La Viande, online. Le cheptel bovin et la production de viande bovine. Available online: https://www.la-viande.fr/economie-metiers/economie/chiffres-cles-viande-bovine/cheptel-bovin-production-viande-bovine [Accessed on 11 March 2025]

Lawrence P, McGee M, and Earley B, 2022. Animal welfare index: an animal welfare evaluation of beef production farms in Ireland. Journal of Applied Animal Research; 50(1), pp. 643–655. https://doi.org/10.1080/09712119.2022.2126478 retrieved from EFSA Public call for evidence, 2024 - PC-0742 5 submitted by IFA

Lensink BJ, Ofner-Schröck E, Ventorp M, Zappavigna P, Flaba J, Georg H, and Bizeray-Filoche D, 2013. Lying and walking surfaces for cattle, pigs and poultry and their impact on health, behaviour and performance. In: Livestock housing. Wageningen Academic. Leiden, The Netherlands. pp. 75–92. https://doi.org/10.3920/978-90-8686-771-4_04

Loberg J, Telezhenko E, Bergsten C, and Lidfors L, 2004. Behaviour and claw health in tied dairy cows with varying access to exercise in an outdoor paddock. Applied Animal Behaviour Science; 89(1-2), pp. 1–16. https://doi.org/10.1016/j.applanim.2004.04.009

Lowe DE, Lively FO, and Gordon AW, 2019. The effect of diet and covering fully slatted concrete floors with rubber strips on the intake, performance and cleanliness of dairy-origin bulls. Animal; 13(9), pp. 2092–2100. https://doi.org/10.1017/S1751731119000272

Lowe DE, Gordon AW, and Lively FO, 2020. Effect of overlaying rubber on fully slatted concrete floors on hoof health and lying postures in finishing dairy-origin bulls offered two contrasting diets. Animal; 14(5), pp. 1043–1051. https://doi.org/10.1017/S1751731119002702

Lundmark Hedman F, Hultgren J, Röcklinsberg H, Wahlberg B, and Berg C, 2018. Non-Compliance and Follow-Up in Swedish Official and Private Animal Welfare Control of Dairy Cows. Animals; 8(5), pp. 72. https://doi.org/10.3390/ani8050072

Magrin L, Gottardo F, Brscic M, Contiero B, and Cozzi G, 2019. Health, behaviour and growth performance of Charolais and Limousin bulls fattened on different types of flooring. Animal; 13(11), pp. 2603–2611. https://doi.org/10.1017/S175173111900106X

Magrin L, Brscic M, Armato L, Contiero B, Lotto A, Cozzi G, and Gottardo F, 2020. Risk factors for claw disorders in intensively finished Charolais beef cattle. Preventive Veterinary Medicine; 175, pp. 104864. https://doi.org/10.1016/j.prevetmed.2019.104864

Marti S., 2024. 10 May 2024. E-mail.

McGettigan CE, McGee M, O'Riordan EG, Kelly AK, and Earley B, 2022. Effect of concrete slats versus rubber-covered slats on the performance, behaviour, hoof health, cleanliness of finishing beef steers and performance, cleanliness and hoof health of weanling cattle. Livestock Science; 266, pp. 105106. https://doi.org/10.1016/j.livsci.2022.105106 retrieved from EFSA Public call for evidence, 2024 - PC-0742 5 submitted by IFA

Minchin W, Buckley F, Kenny DA, Keane MG, Shalloo L, and O'Donovan M, 2009. Prediction of cull cow carcass characteristics from live weight and body condition score measured pre slaughter. Irish Journal of Agricultural and Food Research; 48(1), pp. 75–86.

Ministère de l'agriculture et de la souveraineté alimentaire, online. Le bien-être et la protection des vaches à viande. Available online: https://agriculture.gouv.fr/le-bien-etre-et-la-protection-des-vaches-viande [Accessed on 04 March 2025]

Nederlandse Voedsel- en Warenautoriteit, online. Advies van BuRO over de transportwaardigheid van afgemolken melkkoeien. Available online: https://www.nvwa.nl/over-de-nvwa/documenten/dier/dierenwelzijn/welzijn/risicobeoordelingen/advies-van-buro-over-de-transportwaardigheid-van-afgemolken-melkkoeien [Accessed on 08 April 2025] retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 submitted by Netherlands Food and Consumer Product Safety Authority

Nisula H and Hakkola H, 1979. Lihanautojen määrän vaikutus laitumen satoon. Kehittyvä Maatalou; 42, pp. 12–22. Cited in: Tuomisto L, Mononen J, Martiskainen P, Ahola L, and Huuskonen AK, 2015. Time budgets of finishing bulls housed in an uninsulated barn or at pasture. Agricultural and Food Science; 24(3), pp. 173–182. retrieved from EFSA Public call for evidence, 2024 - PC-0742 11 submitted by MTK

Nor NM, Steeneveld W, and Hogeveen H, 2014. The average culling rate of Dutch dairy herds over the years 2007 to 2010 and its association with herd reproduction, performance and health. Journal of dairy research; 81(1), pp. 1–8. https://doi.org/10.1017/S0022029913000460

Ordre national des vétérinaires, 2019. Réglementation portant sur l'acte vétérinaire : Ordonnance n °2011-78; décret n°2011-1244 et arrêté du 5 octobre 2011. Available online: https://www.veterinaire.fr/je-suis-veterinaire/mon-exercice-professionnel/les-fiches-professionnelles/mon-client-eleveur-souhaite-ecorner-ses-veaux#:~:text=Apr%C3%A8s%204%20semaines%20d'%C3%A2ge,v%C3%A9t%C3%A9rinaire%20ou%20toute%20personne%20qualifi%C3% . [Accessed on 29 March 2025]

Park RM, Foster M, and Daigle CL, 2020. A Scoping Review: The Impact of Housing Systems and Environmental Features on Beef Cattle Welfare. Animals; 10(4), pp. 565. https://doi.org/10.3390/ani10040565 retrieved from EFSA Public call for evidence,

2024 - PC-0742 5 submitted by Netherlands Food and Consumer Product Safety Authority
Pesonen M, 2020. Growth performance, carcass characteristics and meat quality of different beef breeds in typical Finnish production systems. PhD Thesis, Doctoral programme in the Sustainable Use of Renewable Natural Resources University of Helsinki Natural Resources Institute Finland, Helsinki. 91 pp. Available online: https://urn.fi/URN:ISBN:978-952-326-991-0
Rechtsinformationssystem des bundes: Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für 1. Tierhaltungsverordnung, Fassung vom (2025) https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20003820 [Accessed on 13 March 2025]
Schneider L, 2020. Investigations on the behavior of fattening cattle in intensive housing systems. PhD Thesis, Tierärztliche Hochschule Hannover, Hannover. https://elib.tiho-hannover.de/receive/tiho_mods_00001711 retrieved from EFSA Public call for evidence, 2024 - PC-0742 8 submitted by Eurogroup for animals
Schulze Westerath H, Meier T, Gygax L, Wechsler B, and Mayer C, 2006. Effects of the inclination of the lying area in cubicles on the behaviour and dirtiness of fattening bulls. Applied Animal Behaviour Science; 97(2), pp. 122–133. https://doi.org/10.1016/j.applanim.2005.04.023
Smid AMC, Burgers EEA, Weary DM, Bokkers EAM, and von Keyserlingk MAG, 2019. Dairy cow preference for access to an outdoor pack in summer and winter. Journal of dairy science; 102(2), pp. 1551–1558. https://doi.org/10.3168/jds.2018-15007
Smith J, 2023. Feeding and Nutritional Management of Beef Cattle. Merck Manual Veterinary Manual https://www.merckvetmanual.com/management-and-nutrition/nutrition-beef-cattle/feeding-and-nutritional-management-of-beef-cattle
Stafford KJ and Mellor DJ, 2005. Dehorning and disbudding distress and its alleviation in calves. The Veterinary Journal; 169(3), pp. 337–349. https://doi.org/10.1016/j.tvjl.2004.02.005
Statistik Austria, online. Agrarstrukturerhebung. Available online: https://www.statistik.at/atlas/as2020/ [Accessed on 13 March 2025]
Statistischen Ämter des Bundes und der Länder, 2021. Landwirtschaft im Wandel – erste Ergebnisse der Landwirtschaftszählung 2020. Wiesbaden, Germany, p. 24. https://www.destatis.de/DE/Presse/Pressekonferenzen/2021/LZ2020/statement-lz2020.pdf?__blob=publicationFile
Stilwell G., 2024. 18 January 2024. E-mail.
Talmhaiochta AR, Mara Ba, and Departnment of Agriculture FatM, 2023. Aim Bovine Statistics Report 2023. Available online: https://www.gov.ie/pdf/?file=https://assets.gov.ie/291521/9dae358a-aa7e-4bf4-bc65-cd600cc11738.pdf#page=null
Tarantola M, Valle E, De Marco M, Bergagna S, Dezzutto D, Silvia Gennero M, Bergero D, Schiavone A, and Prola L, 2016. Effects of abrupt housing changes on the welfare of Piedmontese cows. Italian Journal of Animal Science; 15(1), pp. 103–109. https://doi.org/10.1080/1828051X.2015.1128691
Teagasc, 2018. Examination of bulls for breeding soundness - An illustrated guide. 70 pp. Available online: https://www.teagasc.ie/media/website/publications/2018/Examination-of-Bulls-for-breeding.pdf
Teagasc, 2020. Castration- Best Practice. Available online: https://www.teagasc.ie/publications/2020/castration--best-practice.php [Accessed on 13 March 2025]
Teagasc, 2021. Suckler calf weaning guidelines. Available online: https://www.teagasc.ie/news--events/daily/beef/suckler-calf-weaning-guidelines.php [Accessed on 04 March 2025]
Teagasc, 2022. Stock bull advice for breeding season 2022. Available online: https://www.teagasc.ie/news--events/daily/beef/stock-bull-advice-for-breeding-season-2022.php [Accessed on 04 March 2025]

Teagasc, 2024a. Mid-Season Breeding Decisions to Improve Farm Profitability. Available online: https://www.teagasc.ie/publications/2024/mid-season-breeding-decisions-to-improve-farm-profitability.php [Accessed on 10 March 2025]

Teagasc, 2024b. Sexed semen accounted for over 20% of dairy AI serves in 2024. Available online: https://www.teagasc.ie/news--events/daily/dairy/sexed-semen-accounted-for-over-20-of-dairy-ai-serves-in-2024.php [Accessed on 07 March 2025]

Teagasc, online a. Calving at two years of age. Available online: https://www.teagasc.ie/animals/beef/grange/beef2022-open-day/calving-at-two-years-of-age/#:~:text=Background,at%2024%20months%20of%20age [Accessed on 04 March 2025]

Teagasc, online b. Using AI in the suckler herd. Available online: https://www.teagasc.ie/media/website/publications/2018/114499-Using-AI.pdf

Teagasc, online c. Successful weaning of calves. Routine calf management. Available online: https://www.teagasc.ie/media/website/animals/beef/dairy-beef/Segment-002-of-Section7-Routine-calf-management-practices.pdf

Teagasc, Departnment of Agriculture Food and the Marine, and Bord Bia Irish food board, 2015. Beef production system guidelines. https://www.teagasc.ie/media/website/publications/2015/Beef-Production-System-Guidelines.pdf retrieved from EFSA Public call for evidence, 2024 - PC-0742 3 submitted by IFA

The Polish Farm Advisory and Training Centre, 2024. 18 February 2024. E-mail.

Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MDJ, Horsley T, Weeks L, Hempel S, Akl EA, Chang C, McGowan J, Stewart L, Hartling L, Aldcroft A, Wilson MG, Garritty C, Lewin S, Godfrey CM, Macdonald MT, Langlois EV, Soares-Weiser K, Moriarty J, Clifford T, Tunçalp Ö, and Straus SE, 2018. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Annals of Internal Medicine; 169(7), pp. 467–473. https://doi.org/10.7326/M18-0850

Tuomisto L, Mononen J, Martiskainen P, Ahola L, and Huuskonen AK, 2015. Time budgets of finishing bulls housed in an uninsulated barn or at pasture. Agricultural and Food Science; 24(3), pp. 173–182. retrieved from EFSA Public call for evidence, 2024 - PC-0742 11 submitted by MTK

Van der Peet G, Leenstra F, Vermeij I, Bondt N, Puister L, and van Os J, 2018. Feiten en cijfers over de Nederlandse veehouderijsectoren 2018. Wageningen. 109 pp. Available online: https://edepot.wur.nl/464128 retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 submitted by Netherlands Food and Consumer Product Safety Authority

Velik M., 2024. 12 April 2024. E-mail.

Vestergaard M, Madsen NT, Bligaard HB, Bredahl L, Rasmussen PT, and Andersen HR, 2007. Consequences of two or four months of finishing feeding of culled dry dairy cows on carcass characteristics and technological and sensory meat quality. Meat Science; 76(4), pp. 635–643. https://doi.org/10.1016/j.meatsci.2007.02.001

Vlemminx R, Bouwknegt M, Urlings B, and van Schaik G, 2023. Associations of carcass weight and trimming loss with cull dairy cow health observations collected at slaughter. Veterinary and Animal Science; 19, 100285. https://doi.org/10.1016/j.vas.2023.100285

von Deylen K, 2020. Straw bedding for finisher bulls. BovINE Beef innovation network Europe. Available online: https://hub.bovine-eu.net/lameness-finisher-bulls/straw-bedding-for-finisher-bulls [Accessed on 13 March 2025]

Webb J, Misselbrook T, Pain BF, Crabb J, and Ellis S, 2001. An estimate of the contribution of outdoor concrete yards used by livestock to the UK inventories of ammonia, nitrous oxide and methane. Atmospheric Environment; 35(36), pp. 6447–6451. https://doi.org/10.1016/S1352-2310(01)00419-8

Appendix A - Extensive literature search strategy

The methodological approach of a rapid review was conducted. A rapid review is defined as a knowledge synthesis in which components of the systematic and scoping review process (Tricco et al., 2018) are simplified or omitted to produce information in a shorter period of time (Khangura et al., 2012).

For this report, the search was limited to the scientific database 'Web of Science'.

A key word combination was defined (see Table 8). Articles were retrieved for the time period 01 January 2012 (year of the last Scientific opinion on welfare of beef: EFSA AHAW Panel (2012)) to 25 February 2025 in order to focus on present housing systems and practices.

The records retrieved from Web of Science were exported to Zotero together with the relevant metadata (e.g. title, authors, abstract). Titles and abstracts were screened for relevance. The full text of articles deemed relevant was reviewed and relevant information extracted.

Search results were scanned by title and abstract for relevance using the following inclusion criteria:

- at least one of the populations studied relates to beef cattle (including fattening cattle, suckler cows, suckler calves, cull dairy cows, breeding bulls)
- Publication after 2012

Articles were screened according to the following criteria:

- Exclusion of complete conference proceedings
- Exclusion of articles without an English title and abstract
- Exclusion of articles on countries other than EU-MS countries
- Exclusion when no (direct) reference to certain housing systems or husbandry practices
- Exclusion of experimental studies on individual (research) farms
- Exclusion of articles related to systems prevalent before 2000
- Exclusion of attitude or consumer studies
- Exclusion of project description only, no results given.

Out of 1,344 search results, 636 articles were excluded based on the publication date. Out of the remaining 708 search results, 208 were identified as relevant by title and abstract screening.

TABLE 8: Description of the literature search on husbandry systems for beef cattle

Keyword combination of the search
TS = (("beef cattle" OR "meat cattle" OR "beef herd$" OR "suckler cow$" OR "suckler calves" OR "suckler calf" OR "fattening cattle" OR "finishing cattle" OR "suckler heifer$" OR "suckler herd$" OR "breeding bull$" OR "fattening bull$" OR "fattening steer$" OR "finishing steer$" OR "beef bull$" OR "beef steer$" OR "end of career cow$" OR "end of career suckler cow$" OR "end of career dairy cow$" OR "cull cow$" OR "cull dairy cow$" OR "weaner$" OR "yearling$") AND (husbandry OR "housing system$" OR "housing type$" OR "farm type$" OR "farm system$" OR "farming system$" OR "management system$" OR "barn design$" OR "housing design$" OR "shelter$" OR "housing condition$" OR "production system$" OR "feeding system$" OR "housing" OR "flooring$" OR "floor$" OR "bedding$" OR "outdoor" OR "grazing" OR "calving facilities" OR "calving facility" OR "feedlot$" OR "feed-lot$" OR "feed lot$" OR "nutrition" OR "feeding$" OR "tethering$" OR "tethered" OR "drinker$" OR "water access" OR "enrichment$" OR "practice$" OR "indoor" OR "artificial insemination" OR "natural mating") AND (Europe OR EU OR European OR Austria OR Austrian OR Belgium OR Belgian OR Bulgaria OR Bulgarian OR Croatia OR Croatian OR Cyprus OR Cypriot OR Czechia OR "Czech Republic" OR Czech OR Denmark OR Danish OR Estonia OR Estonian OR Finland OR Finnish OR France OR French OR Germany OR German OR Greece OR Greek OR Hungary OR Hungarian OR Ireland OR Irish OR Italy OR Italian OR Latvia OR Latvian OR Lithuania OR Lithuanian OR Luxembourg OR Luxembourgish OR Malta OR Maltese OR Netherlands OR Dutch OR Poland OR Polish OR Portugal OR Portuguese OR Romania OR Romanian OR Slovakia OR Slovak OR Slovenia OR Slovenian OR Spain OR Spanish OR Sweden OR Swedish))

Appendix B - List of the stakeholders that engaged with EFSA by attending the event and/or submitting information on beef farming practices.

A list of the stakeholders that engaged with EFSA by attending a beef farming practices event (EFSA, online a) and/or by submitting information to EFSA is provided in Table 9.

TABLE 9: Stakeholders that engaged with EFSA to provide information on beef farming practices.

Stakeholder	Country
Animal Health Europe	Belgium
ANVOL - Association Nationale interprofessionnelle de la Volaille de chair	France
AOP Italia Zootecnica	Italy
ASOPROVAC - Asociación Española de Productores de Vacuno de Carne	Spain
Association of Veterinary Consultants (AVC)	Spain
Belbeef and Codiplan and ILVO	Belgium
BEUC - The European Consumer Organisation	Belgium
Boerenbond vzw	Belgium
CIWF - Compassion in World Farming	Italy
Copa-Cogeca	Belgium
Czech Beef Cattle Association	Czechia
Deutscher Tierschutzbund e.V.	Germany
Diagnostics For Animals	France
EFFAB - European Forum of Farm Animal Breeders	-
ELO - European Landowners Organization	Belgium
Eurogroup for Animals	Belgium
European Commission	-
European Poultry Breeders	Belgium
Fédération Wallonne de l'Agriculture	Belgium
FFCB - Fédération Française des Commerçants en Bestiaux	France
Flanders Research Institute for Agriculture, Fisheries and Food	Belgium
Flemish Government Animal Welfare Department	Belgium
FNB - Fédération Nationale Bovine	France
Four Paws	Germany
FVE - Federation of Veterinarians of Europe	-
General Directorate for Food and Veterinary	Portugal
German Farmers Association	Germany
Heidemark GmbH und Co KG	Germany
Irish Farmers Association (IFA)	Ireland
Ikerbasque, Basque foundation for Science (at NEIKER)	Spain
Institut de l'Elevage (French Livestock Institute)	France
INTERBEV - Association Nationale Interprofessionnelle du Bétail et des Viandes	France
Irish Department of Agriculture, Food and the Marine	Ireland
Istituto Zooprofilattico Sperimentale del Mezzogiorno	Italy
IZSLER - Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna	Italy
Landwirtschaftskammer Nordrhein-Westfalen	Germany
Mendel University in Brno	Czechia
Mission of Brazil to the EU	Brazil
MTK	Finland
Netherlands Food and Product Safety Authority	Netherlands
Putenzucht Miko GmbH	Austria
SAFE - Safe Food Advocacy Europe	Belgium
Sciensano, the Belgian Institute for Health	Belgium
USDA - U.S. Mission to the EU	Belgium
Utrecht University	Netherlands
Vinces Consulting	-

Stakeholder	Country
Marti Sónia	Spain
Stilwell George	Portugal
Velik Margit	Austria
The Polish Farm Advisory and Training Centre	Poland

Appendix C – Beef cattle population numbers

To determine the population of beef cattle in the EU, two Eurostat datasets were used: apro_mt_lscatl (Eurostat, online a) giving the number of animals for different cattle categories and apro_mt_pann (Eurostat, online b) showing the number of slaughtered cattle animals per country.

Table 10 lists the animal categories identified in apro_mt_lscatl to describe the EU beef cattle population. Table 1 in the report summarizes the number of these animal categories per country.

Table 11 presents the numbers of slaughtered cattle per country that were used to build the graph of Figure 2 in the report. Table 12 provides the definition of the animal categories of this second dataset.

Table 13 gathers all the data about beef population that have been received through the EFSA Public call for evidence.

TABLE 10: Eurostat animal categories definitions in apro_mt_lscatl dataset used in Table 1.

Animal category	Category Eurostat	Code Eurostat	Comment
Calves and young cattle (< 1 year), for slaughter	Bovine animals, less than 1 year old for slaughter (calves and young cattle)	A2010B	Includes mainly dairy and suckler calves
Bulls and bullocks (1 to 2 years old)	Male bovine animals, 1 to less than 2 years old	A2120	Includes fattening cattle + future breeding bulls (negligible)
Bulls and bullocks (>2 years old)	Male bovine animals, 2 years old or over	A2130	Includes fattening cattle > 2 year + breeding bulls (negligible)
Heifers (1 to 2 years old), for slaughter	Heifers, 1 to less than 2 years old for slaughter	A2220B	Includes dairy and suckler heifers fattened and culled
Heifers (>2 years old), for slaughter	Heifers, 2 years old or over for slaughter	A2230B	Includes dairy and suckler heifers fattened and culled
Non-dairy cows	Non-dairy cows	A2300G	Includes suckler cows (mainly) and other non-dairy cows

TABLE 11: Slaughtering of cattle in the European Union (number of animals), countries ordered by total quantity of bovine meat. Eurostat data, mean 2019-2023 (apro_mt_pann dataset Eurostat (online b)). c: confidential

GEO (Labels)	Calves	Young cattle	Bullocks	Bulls	Cows	Heifers	Bovine meat (total)
Total (European Union - 27 countries)	4,159,300	1,525,400	945,300	6,095,400	6,404,700	3,657,800	22,789,300
France	1,145,800	71,900	135,900	830,300	1,591,200	582,300	4,357,800
Germany	308,300	16,600	28,000	1,187,700	1,085,800	551,600	3,178,400
Italy	609,800	51,600	4,300	853,700	549,400	638,300	2,707,400
Spain	79,000	839,500	7,300	765,100	364,700	450,500	2,506,400
Netherlands	1,425,000	153,900	0	62,600	457,100	12,400	2,111,200
Ireland	23,800	8,200	683,900	176,900	385,300	583,300	1,861,700
Poland	43,000	4,300	0	926,500	538,000	304,100	1,816,200
Belgium	307,000	7,800	600	140,400	315,400	11,200	782,700
Austria	55,000	14,700	36,600	240,200	186,000	113,000	645,700
Denmark	900	150,700	7,400	63,200	168,800	59,300	450,400
Sweden	2,500	9,900	32,700	175,600	135,100	66,300	422,400
Portugal	48,700	90,700	1,300	113,700	85,700	60,400	400,800
Finland	400	1,100	0	133,700	69,200	57,100	261,600
Czechia	5,400	2,400	600	95,300	102,000	26,000	231,900
Croatia	42,700	3,200	0	76,200	16,800	29,800	169,000
Romania	15,300	38,300	3,300	20,200	69,100	8,400	154,700
Lithuania	6,100	1,000	0	53,000	69,700	23,000	153,000
Greece	10,100	39,700	1,400	44,600	27,700	21,800	145,700
Slovenia	13,100	3,500	400	59,200	23,000	19,000	118,400
Hungary	3,200	3,700	c	20,400	64,200	10,600	102,700
Latvia	8,500	2,900	0	13,900	33,400	9,600	68,500
Estonia	1,800	900	200	7,000	18,500	4,600	33,200
Bulgaria	1,300	2,500	0	7,200	17,700	2,900	31,700
Slovakia	700	c	c	12,000	12,100	1,700	27,300

GEO (Labels)	Calves	Young cattle	Bullocks	Bulls	Cows	Heifers	Bovine meat (total)
Luxembourg	400	700	600	9,300	9,600	6,300	27,200
Cyprus	300	4,400	0	4,500	6,500	2,400	18,400
Malta	10	100	0	1,800	1,300	500	3,800

TABLE 12: Eurostat animal categories definitions in apro_mt_pann dataset used in Table 11 (Eurostat, 2020)

Animal category	Definition
Calf	Bovine animal aged 8 months or under (include dairy and suckler calves, males and females) Deviation: in Poland, the data is collected on the base of weight of cattle (calves is a category with cattle under 160 kg and young cattle from 160 to 300 kg)
Young cattle	Bovine animals aged over 8 but not over 12 months (include dairy and suckler young cattle)
Bullock	Castrated bovine animals aged 1 year or more (include dairy and suckler bullocks)
Bull	Non-castrated male bovine animals aged 1 year or more (include cull dairy and suckler breeding and fattened bulls)
Cow	Female bovine animals aged 1 year or more and that have calved (include dairy and non-dairy cows) Deviation: In the Netherlands, cull dairy cows are not included in the number of cows
Non-dairy cows	Cows other than dairy cows, possibly including draught cows
Heifer	Female bovine animals aged 1 year or more and that have not yet calved (include dairy and suckler cull and fattened heifers)

TABLE 13: Beef population data from the EFSA Public call for evidence

Country	Data	Reference
Belgium	Cattle population in 2022: ○ Bovine animals: 2,240,000 ○ Dairy cows: 538,000 ○ Suckler cows: 398,000 ○ Heifers (> 1-year-old): 531,000 ○ Heifers for meat production (1 to 2-year-old): 18,000 ○ Heifers for meat production (> 2-year-old): 16,000 ○ Males (1 to 2-year-old): 110,000 ○ Males (> 2-year-old): 27,000 ○ Calves under 1 year for veal production: 168,000 ○ Other calves: 544,000 Beef breeds: ○ 88% Belgian Blue ○ 4% Limousin ○ 3% Blonde d'Aquitaine ○ 5% other meat breeds and crossbreeds	EFSA Public call for evidence, 2024 - PC-0742 1 - Belbeef
Czechia	In 2023, 350,744 total suckler cows with 31,982 registered females in Herd-Book.	EFSA Public call for evidence, 2024 - PC-0742 1 - Czech Beef Cattle Association
Finland	Total population of bovine animals in Finland is ○ Bovine animals: 820,000: ○ Dairy cows: 242,000 ○ Suckler cows: 64,600 ○ Calves under 1 year: 280 000 ○ Fattening cattle: 100 300	EFSA Public call for evidence, 2024 - PC-0742 1 - MTK

Country	Data	Reference
Germany	Beef production systems in Germany: ○ Cows and calves farming (usually beef breeds): calves stay in the herd until slaughter, mostly extensive ○ Fattening of calves from dairy cows (mostly from dual-purpose breeds) ○ Intensive fattening of bulls: The intensive fattening of bulls plays a major role in Germany and is associated with considerable animal welfare problems ○ Calf fattening: does not yet play a major role in Germany but there are high numbers of calves from dairy production that are not used for further breeding. Transportation abroad of these calves is associated with several animal welfare problems. Therefore, some farmers are prompted to look for regional fattening solutions for these calves. Until today, few regional marketing structures have been developed, partly with cow-based rearing, straw rearing or pasture fattening of bulls. Fattening cattle population in Germany: ○ Number of animals: 862,000 fattening bulls, 962,100 male fattening cattle > 1 year old (2023) ○ Number of farms: 73,271 farms with male fattening cattle > 1 year old (2023). Most farms with fattening bulls are located in Bavaria, while most fattening bulls are kept in Lower Saxony. Herd size: ○ 13 bulls per farm on average ○ 75 % with < 10 bulls ○ % with > 100 bulls with 33% of fattening bulls Beef meat in Germany: ○ 50% bull meat (mainly from young bulls) ○ 17% heifers ○ < 1% oxen ○ 5% veal (meat from cattle < 8 months) ○ 32% (old cows)	EFSA Public call for evidence, 2024 - PC-0742 1 - Deutscher Tierschutzbund e.V. Source of information: practical experience on cattle farms and knowledge exchange with various experts in the field; (Agethen et al., 2023 retrieved from EFSA Public call for evidence, 2024 - PC-0742 2 - Eurogroup for Animals) (Hörz, 2019 retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 - Four Paws; Bundesministerium für Ernährung und Landwirtschaft, online)
Ireland	Between sucklers and dairy-beef there are just over 5 million beef cattle in Ireland: ○ suckler calves – 814,412 ○ dairy-beef calves – 951,926 ○ suckler cows & heifers - 855132 ○ fattening cattle (suckler beef and dairy-beef) - 1,868,894 ○ breeding bulls – 69,885 ○ cull dairy and suckler 477,231	EFSA Public call for evidence, 2024 – PC-0742 1 – IFA; (Talmhaiochta et al., 2023)

Country	Data	Reference
Italy	In 2023, there were about 2,300,000 beef cattle fattened in Italy, of which 80% are present in the farms located in the regions of northern Italy in the Po Valley (Veneto, Lombardy, Piedmont, Emilia Romagna).	(Anagrafe Nazionale Zootecnica, 2024a retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 - AOP Italia Zootecnica); (Anagrafe Nazionale Zootecnica, 2024b retrieved from EFSA Public call for evidence, 2024 - PC-0742 2 - Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna)
Netherlands	There are 3 sources of beef (meat) in the Netherlands. ○ cull dairy cows (largest group) ○ beef cattle (suckler cows and beef steers) and ○ fattening of cull dairy cows (very small group) In 2020 359,181 cull dairy cows were sent to slaughter from Dutch dairy farms. Based on the 2017 Agricultural Census, Baltussen et al. (2019): ○ 4,153 farms with suckler cows (60,000 animals) ○ 7,550 farms with beef bulls (55,000 – 60,000 animals) ○ 80% of the farms have 10 or fewer animals.	EFSA Public call for evidence, 2024 – PC-0742 1 - Netherlands Food and Consumer Product Safety Authority; Nederlandse Voedsel- en Warenautoriteit (online retrieved from EFSA Public call for evidence, 2024 - PC-0742 1 - Netherlands Food and Consumer Product Safety Authority)
Spain	Total cattle population around 6.5 million (~ 140,000 farms) ○ 32 % suckler cows ○ 13 % milking cows ○ 5 % other cattle of 24 months (males and heifers) ○ 39 % animals under 12 months ○ 12 % animals of 12-24 months Suckler cow farms majority < 100 LU: ○ 28% 20-50 LU ○ 20% 10-20 LU ○ 27% < 10 LU Fattening cattle farms larger in size than suckler cows: ○ < 20 LU less frequent ○ 26% 20-50 LU ○ 23% 50-100 LU 20% 100-200 LU	(ASOPROVAC, 2024 confirmed this by email on 9 February 2024)

Appendix D - Space allowance

TABLE 14: Data related to space allowance for fattening cattle, according to the information received through the EFSA Public call of evidence.

Country	Type of housing	Production stage	Space allowance (m^2)	Reference
Belgium	All types	Suckler cows	5m² to 12m² (smallest standards apply for sloping pens)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef)
	Bedded Loose pen	Cow + calves (pen of 16 cows)	6.5-7 m^2 / cow 1-1.6m^2 / calves	
	Bedded pens	600 kg bulls 600 kg heifers	2.6m² 3.1m²	
	Bedded pens without a slope	600 kg bulls 600 Kg heifers	3.1m² 3.7 m²	
	Fully bedded pen	Group pen (7 to 8 animals of 700 kg)	56 m^2 (7/8m^2 each)	
	Cubicle	75-150 kg 150-250 kg 250-375 kg 375-500 kg 600 kg 700 kg	1,2 m* 0.6m 1,5 m * 0.75 m 1,7 m * 0.9 m 2.01 m * 1.13 m 2.10 m * 1.17m 2.17 m * 1.42 m	
Ireland	Slatted house	Suckler cows > 275 Kg < 275 Kg	2.5-3.0m²/cow 2.0-2.5m²/animal 1.2-1.5m²/animal	Clarke (online retrieved from EFSA Public call for evidence 2024 - PC-0742 6 - IFA)
	Straw-bedded sheds	< 275 Kg >275 Kg	2.4-3.0m²/animal 4.0-5.0m²/head	
	Resting/ lying area	< 275 Kg >275 Kg	2.4-3.0m²/animal 4.0-5.0m²/head	
Finland	Slatted floor pens	700 kg 600-700 kg 500-600 kg 400-500 kg 300-400 kg 200-300 kg	> 3.2 m2 3.0 m2 2.5 m2 2.3 m2 2.0 m2 1.8 m2	EFSA Public call for evidence, 2024 – PC-0742 6 – Netherlands Food and Consumer Product Safety Authority
	Fixed-floor pen	>700 kg 600-700 kg 500-600 kg 400-500 kg 300-400 kg 200-300 kg	5.5 m2 5.0 m2 4.5 m2 4.0 m2 3.5 m2 3.0 m2	
	Cold farms	>700 kg 600-700 kg 500-600 kg 400-500 kg 300-400 kg 200-300 kg	6.5 m2 6.0 m2 5.0 m2 4.5 m2 4.0 m2 3.5 m2	
Italy	Slatted floor Deep litter	/ /	3m^2 4m^2	EFSA Public call for evidence, 2024 – PC-0742 6 – AOP Italia Zootecnica
Germany	Slatted floor	>350 Kg bull 350-600 kg bull >600 kg bull	2.5 m^2 2.8 m^2 3.0 m^2	EFSA Public call for evidence, 2024 – PC-0742 4 – Landwirtschaftskammer Nordrhein-Westfalen
	Lying area with rubber floor	350 kg bull 350-600 kg bull >600 kg bull	1.9 m^2 2.10 m^2 2.25 m^2	
	Bedded house	≥250 Kg Bull	3.5-5.0 m^2	

TABLE 15: Data related to space allowance for fattening cattle according to age in Finland received from the EFSA Public call for evidence.

Country	Weight	Resting/lying area (total area includes manure passage)	Slatted pen	Bedded pen (fully or partially bedded)	Reference
Finland	> 22 months	2.6 m^2 (Total area: 5.5m^2)	3,0 m2		EFSA Public call for evidence, 2024 – PC-0742 6 – MTK
	18-22 months	2.2. m^2 (Total area: 4.4m^2)	2,5 m2		
	12-18 months	1.8 m^2 (Total area: 3.7 m^2)	2,3 m2		
	6-12 months	1.4 m^2 (Total area 3.2 m^2)	2,0 m2		
	Calves 4-6 months	1.0 m^2 (Total area: 2.2 m^2)	1,8 m2	2.5m2	
	Calves 2-4 months	0.9 m^2 (Total area: 2.0 m^2)	1,8 m2	2.0m2	
	Calves 0-2 months	0.8 m^2 (Total area 1.5 m^2)		1.5m2	

TABLE 16: Data related to space allowance for suckler cows and calves received from the EFSA Public call for evidence.

Country	Housing type	Space allowance	Reference
Germany	All type	8-10 m2 / cow-calf pair	EFSA Public call for evidence, 2024 – PC-0742 4 – Landwirtschaftskammer Nordrhein-Westfalen (attachment)
	Separate pen	1.5–2.0 m2 / suckler calf	
	Calving pen	minimum size 5.0 x 5.0 m2 (for a single box) for a cow calf pair	
Finland	Resting/ lying area	3.5 m2 / cow calf pair 7 m2 total area (including manure passage) / cow-calf pair	Finnish Code of Laws (2017 retrieved from EFSA Public call for evidence, 2024 – PC-0742 6 – MTK) (requirement)
Belgium	All type	5m² to 12m² (smallest standards apply for sloping pens)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)
Belgium	Bedded stable	6.5-7 m2 / cow 1-1.6m2 / calves (pen of 16 cows)	Department Landbouw en Visserij (2012 retrieved from EFSA Public call for evidence 2024 - PC-0742 4 - Belbeef) (recommendation)

Appendix E - Instructions for accessing submissions from the Public call for evidence

The submissions referenced in this technical report are identified under the label 'EFSA Public call for evidence 2024', followed by the prefix 'PC-0742' which denotes the unique identifier of the Public call for evidence on the welfare of beef cattle on farm. This prefix is further followed by a number indicating the specific topic of the call the submission refers, alongside the name of the organisation that provided each submission.

The data provided by each stakeholder through the Public call for evidence is publicly available at the following webpage: https://open.efsa.europa.eu/consultations/a0cTk00000024kHIAQ

The submissions specifically referenced in this technical report are listed in Table 17.

- For submissions in the form of comments, open the webpage linked above and use the "Download all comments" button to download all comments in a single file. Once downloaded, the relevant comment can be identified by searching for the corresponding Comment Number listed in the table.
- For submissions in the form of attachments, open the webpage linked above and use the Public Consultation ID and the organisation's name as listed in Table 17 to locate the relevant submission. Additional details on where to find the attached file are provided in the "Submission Location Details" column. These details can be retrieved on a page view displaying 20 results per page. If this column is left empty, it means that no file was attached to the submission.

TABLE 17: Summary of submissions received in response to the EFSA Public call for evidence, 2024 and cited in the present document (Technical Report (Art.31)). Each submission is identified by a unique Public Consultation ID and the corresponding organisation. Additional details on where to locate attached files to the submissions (if provided) are provided in the last column.

Public call for evidence ID	Stakeholders submitting information on beef farming practices	Comment number	Attached file location on Open EFSA link, if provided* ('20/page' view)
PC-0742 1	Irish Farmers Association (IFA)	174	–
PC-0742 3	Irish Farmers Association (IFA)	176	–
PC-0742 5	Irish Farmers Association (IFA)	177	–
PC-0742 6	Irish Farmers Association (IFA)	178	–
PC-0742 8	Irish Farmers Association (IFA)	179	–
PC-0742 12	Irish Farmers Association (IFA)	182	–
PC-0742 1	Netherlands Food and Consumer Product Safety Authority	2	Page 1
PC-0742 5	Netherlands Food and Consumer Product Safety Authority	6	Page 1
PC-0742 6	Netherlands Food and Consumer Product Safety Authority	7	Page 1
PC-0742 10	Netherlands Food and Consumer Product Safety Authority	11	Page 1
PC-0742 4	Landwirtschaftskammer Nordrhein-Westfalen	81	Page 5
PC-0742 11	Landwirtschaftskammer Nordrhein-Westfalen	86	Page 5
PC-0742 1	MTK	119	Page 6
PC-0742 6	MTK	124	Page 6

Public call for evidence ID	Stakeholders submitting information on beef farming practices	Comment number	Attached file location on Open EFSA link, if provided* ('20/page' view)
PC-0742 8	MTK	126	–
PC-0742 11	MTK	129	–
PC-0742 1	Four Paws	30	Page 2
PC-0742 4	Four Paws	33	Page 2
PC-0742 8	Association of Veterinary Consultants (AVC)	215	–
PC-0742 10	Association of Veterinary Consultants (AVC)	217	–
PC-0742 1	AOP Italia Zootecnica	192	Page 10
PC-0742 6	AOP Italia Zootecnica	197	–
PC-0742 8	AOP Italia Zootecnica	199	–
PC-0742 10	AOP Italia Zootecnica	201	–
PC-0742 1	Belbeef	23	Page 2
PC-0742 4	Belbeef	24	Page 2
PC-0742 8	Belbeef	25	Page 2
PC-0742 2	Eurogroup for animals	167	Page 9
PC-0742 8	Eurogroup for animals	171	Page 9
PC-0742 1	Deutscher Tierschutzbund e.V.	145	Page 8
PC-0742 11	Deutscher Tierschutzbund e.V.	155	Page 8
PC-0742 12	Deutscher Tierschutzbund e.V.	156	Page 8
PC-0742 1	Czech Beef Cattle Association	38	–
PC-0742 8	Czech Beef Cattle Association	44	–
PC-0742 2	Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna "Bruno Ubertini" (IZSLER)	59	–

*Not all the attachments provided were used in this Technical report but they are mentioned for completeness.