



EFSA OPINION ON WELFARE OF CALVES ON FARM

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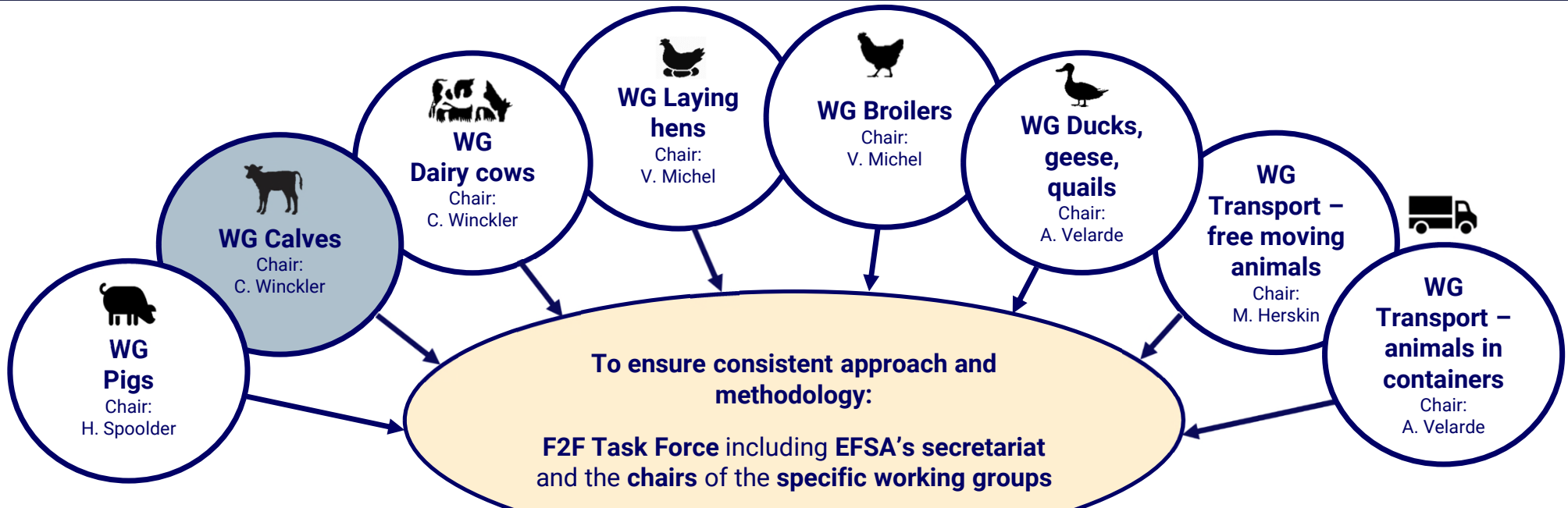
PAFF meeting 25 April


STRUCTURE OF THIS PRESENTATION

1. Background
2. Terms of reference and scope of work
3. Data and methodology
4. Results on husbandry systems
5. Specific recommendations on space, grouping, iron, fibre
6. Recommendations on cow-calf contact
7. Recommendations on ABMs collected at slaughter
8. Take home message



OVERVIEW OF THE F2F MANDATES SCIENTIFIC OPINIONS



SCIENTIFIC OPINION 

ADOPTED: 1 June 2022
doi: 10.2903/j.efsa.2022.7403

Methodological guidance for the development of animal welfare mandates in the context of the Farm to Fork Strategy

EFSA Panel on Animal Health and Welfare (AHAW),

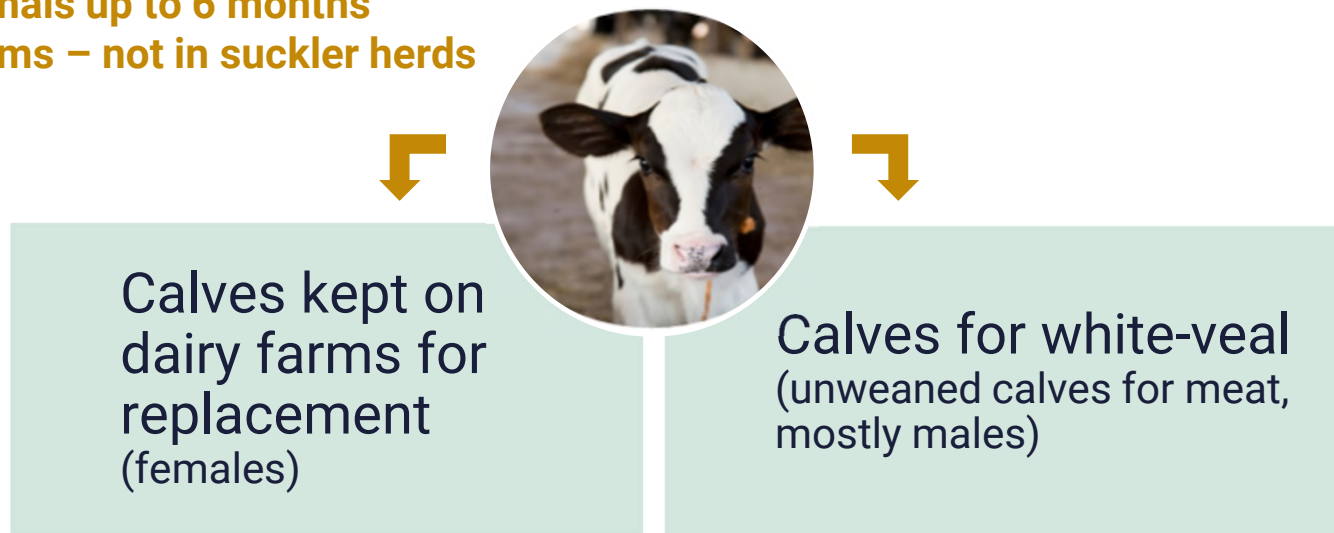


SCOPE OF THIS WORK

The **European Commission** requested EFSA to give an independent view on the protection of calves related to the *welfare of calves*:

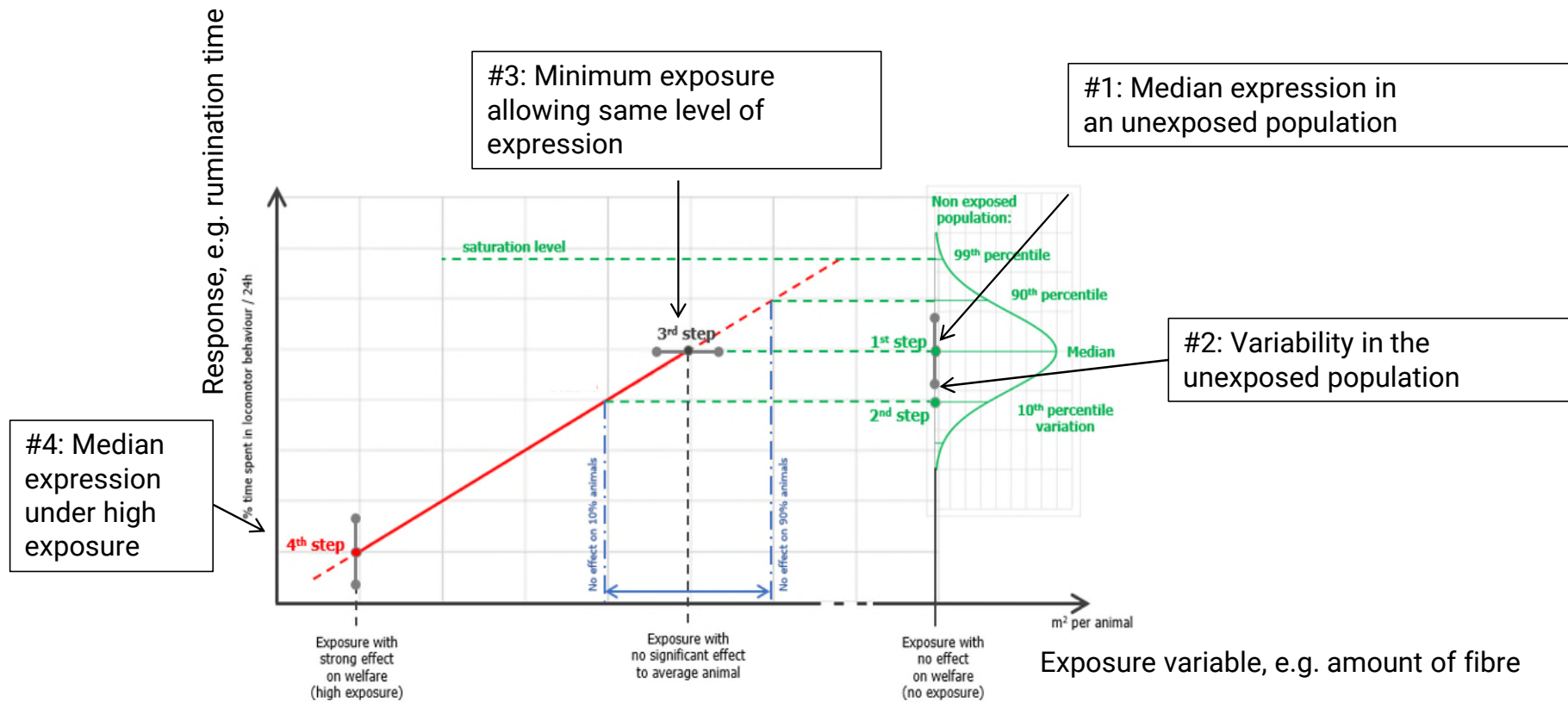
Scope:

Bovine animals up to 6 months
Born on dairy farms – not in suckler herds



DATA AND METHODOLOGY – F2F MODEL

MODEL TO ASSESS EFFECTS OF AN EXPOSURE VARIABLE ON ANIMAL WELFARE



TERMS OF REFERENCE

General ToR. Assessment of **main husbandry systems** in terms of welfare consequences

Specific scenario 1. The welfare of male dairy calves raised for producing **“white” veal meat** and the risks associated with individual housing, insufficient space, and feed restriction (such as deprivation of iron and fibre)

Specific scenario 2. The assessment of **ABMs collected in slaughterhouses** to monitor the level of on farm welfare of male dairy calves raised for producing “white” veal meat

Specific scenario 3. The welfare of dairy calves and the risks associated with **limited cow-calf bond.**



EFSA to propose

**Detailed, qualitative and quantitative ABMs
and preventive and corrective measures**

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DATA AND METHODOLOGY



Literature review



Methodologies for space allowance, fibre, iron, group size and age at grouping

Expert Knowledge Elicitation (EKE)

“Farm to fork” model



Uncertainty analysis

| Quantitative assessment | Certainty range | | |
|-------------------------|----------------------|-------------------------------|------------------------------------|
| | > 50- 100% | 66-100% | 90-100% |
| Qualitative translation | More likely than not | From likely to almost certain | From very likely to almost certain |





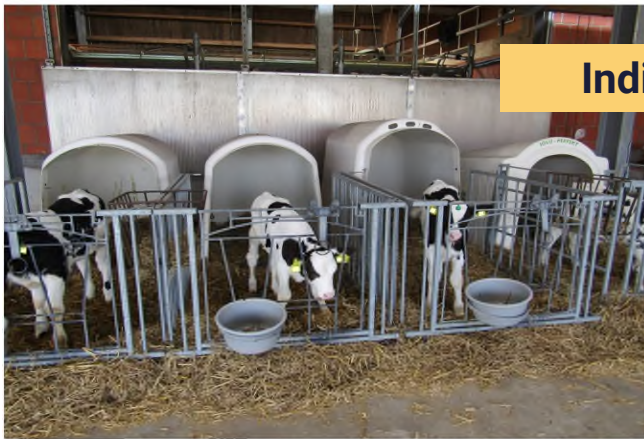
RESULTS: HUSBANDRY SYSTEMS



RESULTS: MAIN HOUSING SYSTEMS DESCRIPTION (TOR 1)

DAIRY FARMS – BEFORE WEANING

Individual housing



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Small groups with milk feeding by bucket /trough



© G. Stilwell

Cow-calf contact



© S. Waiblinger



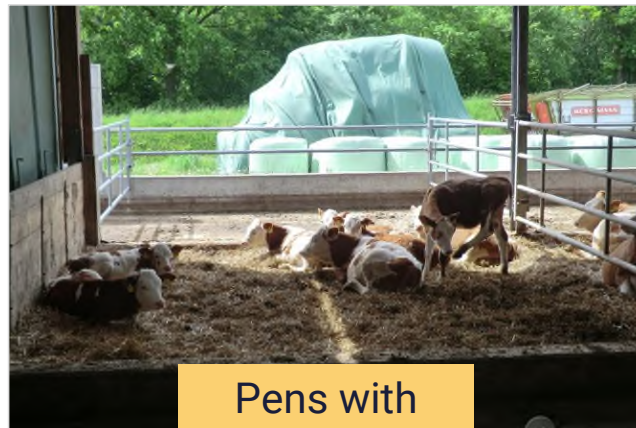
RESULTS: MAIN HOUSING SYSTEMS DESCRIPTION (TOR 1)

DAIRY FARMS – AFTER WEANING TILL 6 MONTHS



Fully or partially
slatted floor without
bedding

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Pens with
littered floor

© BOKU



Cubicles

© S. Waibilinger



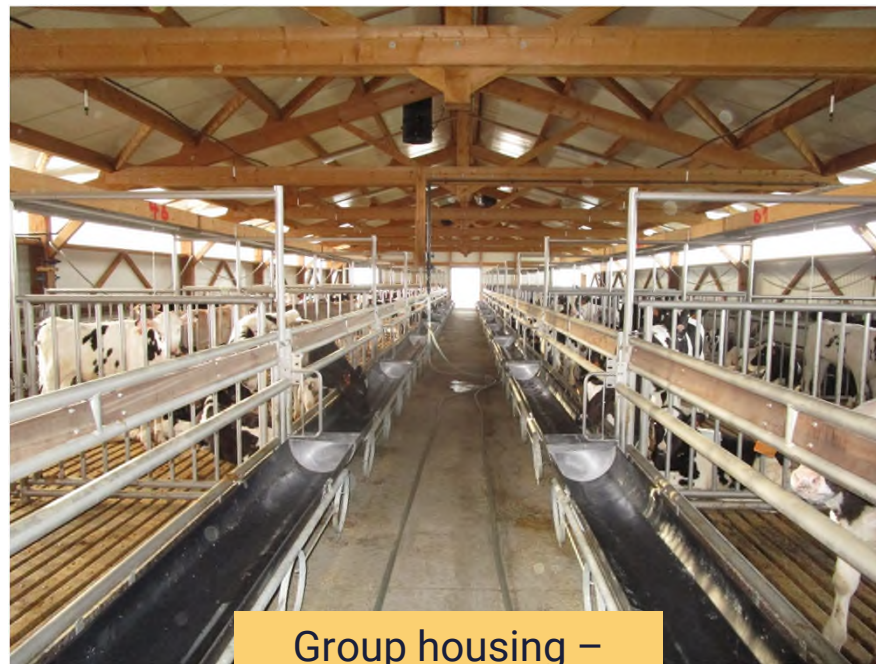
HUSBANDRY SYSTEMS VEAL CALVES

VEAL FARMS



Individual housing

© M. Bršćić



Group housing –
Small groups

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HUSBANDRY SYSTEMS VEAL CALVES

VEAL FARMS



© M. Brščić

Group housing – large groups



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RESULTS: WELFARE CONSEQUENCES (TOR 2)

| Welfare consequences |
|--|
| Respiratory disorders |
| Inability to perform exploratory or foraging behaviour |
| Gastro-enteric disorders |
| Inability to perform sucking behaviour |
| Group stress |
| Resting problems |
| Inability to perform play behaviour |
| Restriction of movement |
| Prolonged hunger |
| Inability to chew and ruminate |
| Isolation stress |
| Metabolic disorders |
| Separation stress |
| Heat stress |
| Handling stress |

15 welfare consequences
were identified as **highly relevant**

- ABMs (e.g., Play behaviour)
- Hazards (e.g., insufficient space allowance per calf)
- Preventive measures (e.g., avoid individual housing systems)



HUSBANDRY SYSTEMS

RECOMMENDATIONS

- Adequate **colostrum** management
- Provision of large milk amounts (~ 20% body weight per day until at least 4 weeks of life)
- **Long roughage** in racks
- **Water** through an open surface
- **Access to shade or insulated shelters**
- Provision of **brushes**
- Good **ventilation**
- Transport events, commingling and regrouping should be **avoided**

Further quantitative recommendations provided for grouping, space, iron and fibre



SPECIFIC SCENARIO 1 - VEAL CALVES: REQUIREMENTS OF SPACE, GROUP SIZE, IRON, AND FIBRE





**SPECIFIC SCENARIO 1 –
REQUIREMENTS OF SPACE**



SPECIFIC SCENARIO 1: VEAL CALVES – LIMITED SPACE

WELFARE CONSEQUENCES FROM LIMITED SPACE

Restriction of movement

Resting problems

Inability to perform play behaviour

RELATIONSHIP BETWEEN SPACE AND BEHAVIOUR

| SPACE ALLOWANCE | IMPACT ON BEHAVIOUR |
|--------------------|---|
| 1.8 m ² | Higher probability of respiratory disease |
| 2 m ² | Reduced lying times |
| 3 m ² | Resting in a relaxed position |
| 20 m ² | Locomotor play behaviour* |

*estimated by Expert Knowledge Elicitation (EKE)

See Section 4.16.2.5 of the Scientific Opinion for more details



SPECIFIC SCENARIO 1: VEAL CALVES – LIMITED SPACE

RECOMMENDATIONS – SPACE ALLOWANCE

Space allowance

- Current minimum space allowance (i.e. 1.8 m² per animal) should be increased to **at least 3 m² per animal** to increase time spent lying in a relaxed posture and likely an increase in general activity
- **20 m² per animal** to allow for full locomotor play behaviour





SPECIFIC SCENARIO 1 –

**REQUIREMENTS OF GROUP SIZE AND AGE AT
GROUPING**



SPECIFIC SCENARIO 1: VEAL CALVES – GROUPING

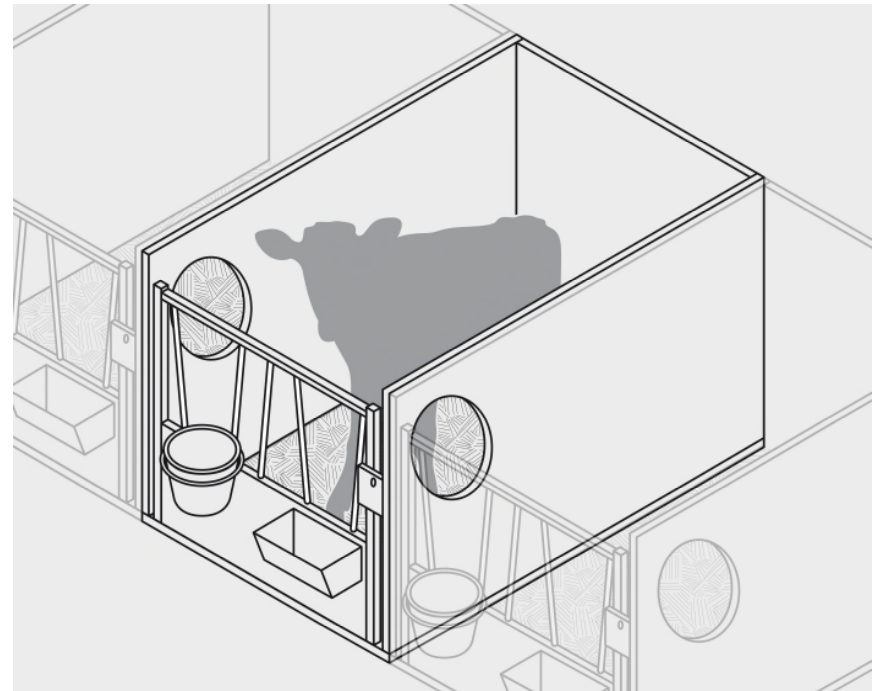
INDIVIDUAL HOUSING

WELFARE CONSEQUENCES

Isolation stress

Impaired social behaviour development

Impaired learning ability

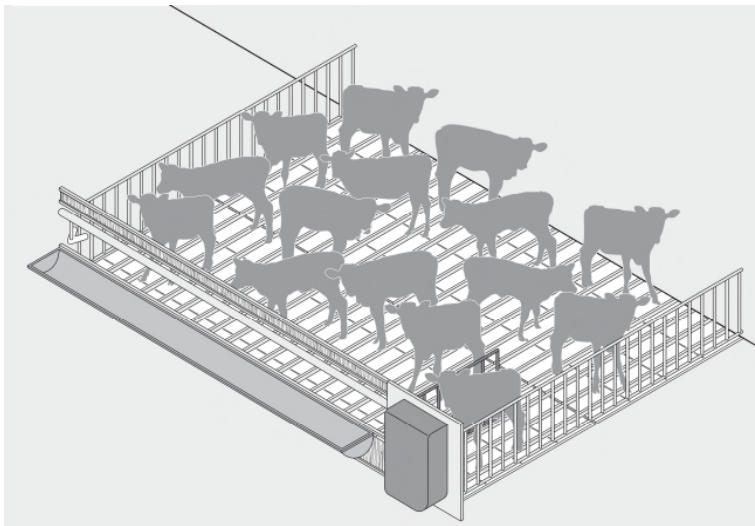


SPECIFIC SCENARIO 1: VEAL CALVES – GROUPING

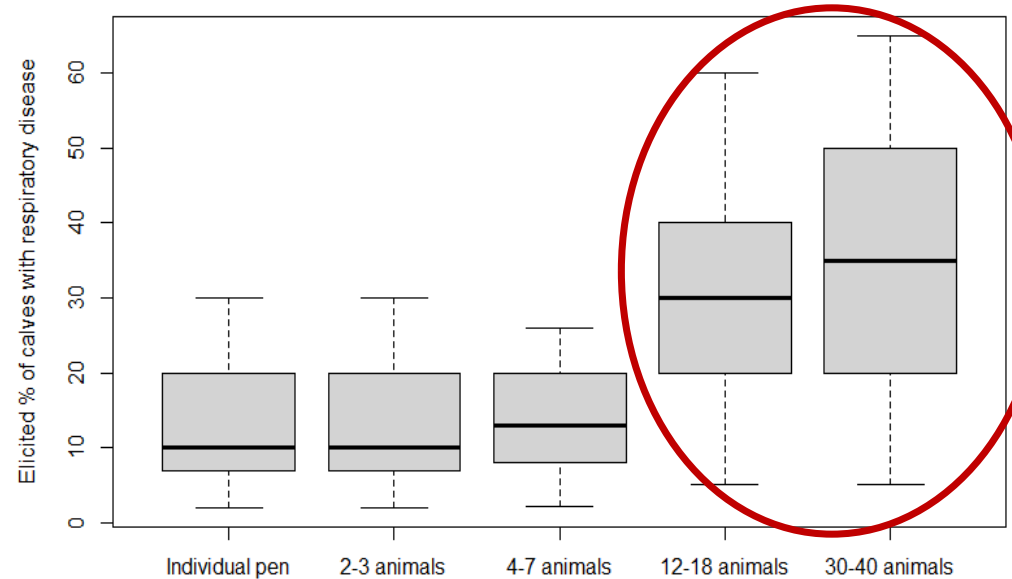
HOUSING IN LARGE GROUPS

WELFARE CONSEQUENCES

Group stress
Respiratory disorders



Elicited respiratory disease prevalence per group size



SPECIFIC SCENARIO 1: VEAL CALVES – GROUPING

RECOMMENDATIONS

- Unless they have contact with the dam, calves should be moved to and **kept in pairs or small groups (2-7 animals) within the first week of life** (i.e., before day 7)
- Calves should not be kept individually at the veal unit. Veal calves should be housed in **groups of ~ 7 animals** at least **until the age of 6 weeks**
- Calves should be kept with a familiar pen mate(s) from the dairy farm of origin after arrival at the veal unit and **groups should be kept stable** as much as possible
- Aspects such as ventilation and pen air volume should be well managed, but further research is needed for specific recommendations on these parameters





SPECIFIC SCENARIO 1 –

IRON REQUIREMENTS



SPECIFIC SCENARIO 1: VEAL CALVES – IRON



Natural variation haemoglobin levels first weeks of life

WELFARE EFFECTS

| | | |
|------------------------------------|------------|---|
| Haemoglobin concentration (mmol/L) | 4.34 | Higher infection rates |
| | 4.5 | <i>Current minimum haemoglobin value</i> |
| | 4.6 | Impaired weight gain |
| | 5.3 | Higher physical effort |
| | > 6 | No welfare effects observed |

RECOMMENDATIONS

- **Avoid Hb < 5.3 mmol/L in veal calves**
- Collection, record keeping and **accessibility** of haemoglobin data from white veal production for assessment **welfare effects of Hb values between 4.5 and 5.6 mmol/L**
- Diet of veal calves should be composed of **feedstuff high in iron such as roughage** (e.g., hay)

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A photograph of several black and white cows in a barn, eating from a long metal trough filled with hay. The cows are wearing yellow ear tags. The scene is dimly lit, with the primary light source coming from the left, creating a strong shadow on the right side of the trough. The background shows the metal bars of the stalls.

SPECIFIC SCENARIO 1 –

FIBRE REQUIREMENTS



SPECIFIC SCENARIO 1: VEAL CALVES – FIBRE

**Standard diet of
white veal calf**
Milk + mostly corn
Limited fibre intake



WELFARE CONSEQUENCES

Inability to chew and ruminate
Gastro-enteric disorders (e.g.
abomasal ulcers)

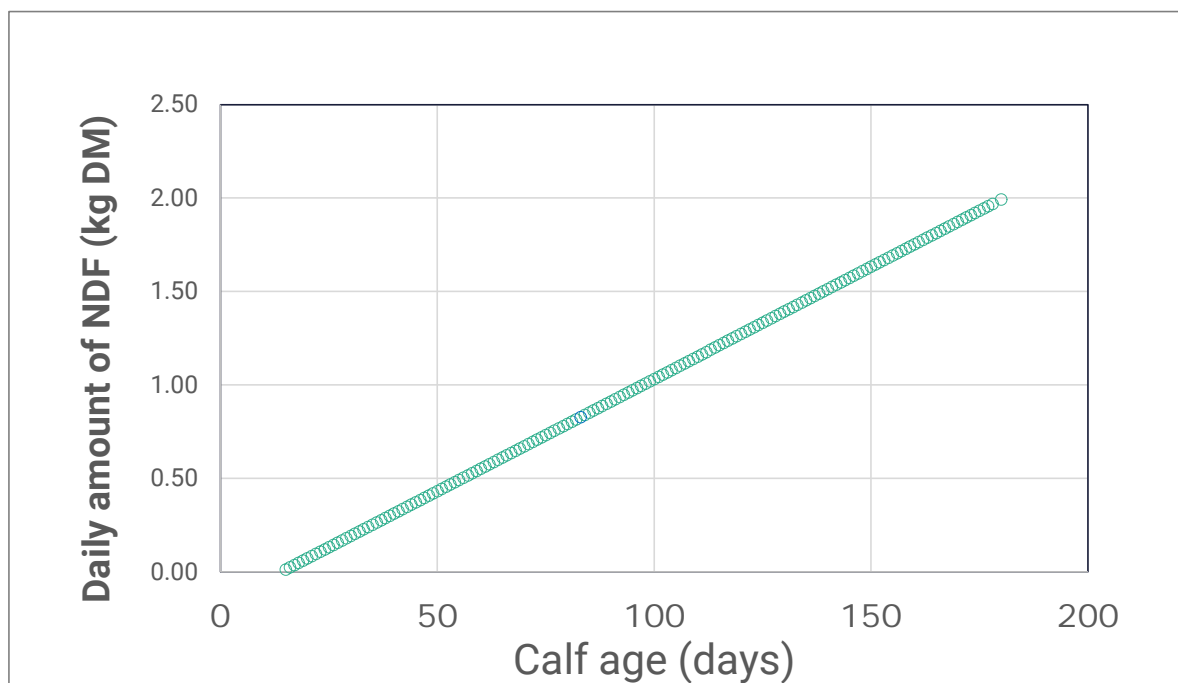


Current feeding plans (0.19 kg NDF/ day):
White veal calves only show limited rumination times (~1/3)

RECOMMENDATION An ingestion of **1 kg of NDF (DM) per day**
for calves to show full extent of rumination

SPECIFIC SCENARIO 1: VEAL CALVES – FIBRE

RECOMMENDATIONS- AMOUNT OF FIBRE (NDF) TO BE PROVIDED OVER TIME (2 WEEKS AND 6 MONTHS)



| Age // weight (LW) | 2 - 8 weeks / 40 kg | 9 - 18 weeks / 80 kg | 19 - 25 weeks / 130-300 kg | Total |
|--------------------|---------------------|----------------------|----------------------------|------------|
| Kg NDF DM | 11 | 65 | 90 | 166 |

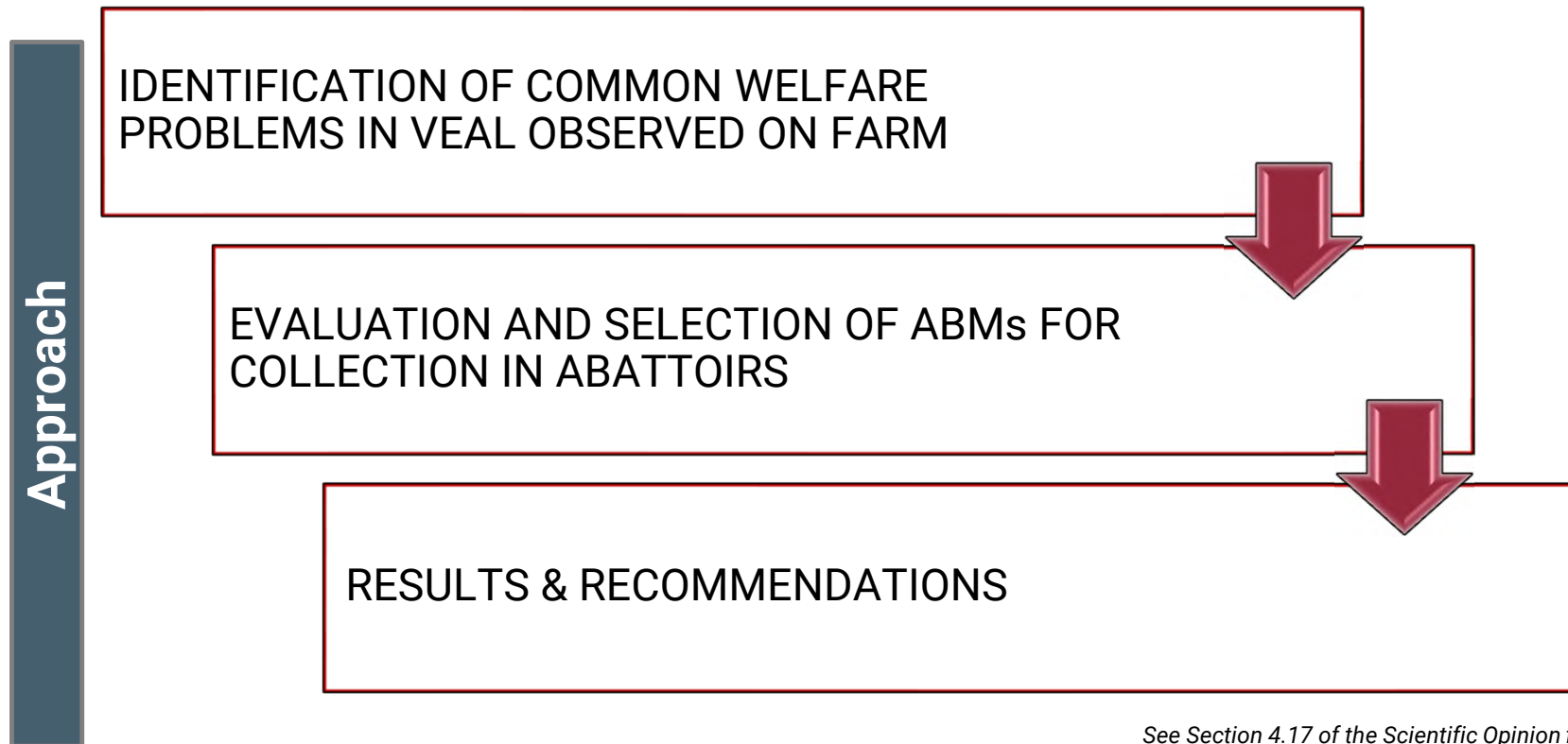


**SPECIFIC SCENARIO 2 – VEAL
CALVES - ABM COLLECTED IN
ABATTOIRS**



SPECIFIC SCENARIO 2 – WELFARE INDICATORS COLLECTED IN ABATTOIRS

SPECIFIC SCENARIO 2. The assessment of ABMs collected in slaughterhouses to monitor the level of on farm welfare of male dairy calves raised for producing “white” veal meat



See Section 4.17 of the Scientific Opinion for more details



SPECIFIC SCENARIO 2 – WELFARE INDICATORS COLLECTED IN ABATTOIRS

RESULTS AND RECOMMENDATIONS

SUGGESTED ABMS

1. Body condition score
2. Carcass condemnations
3. Carcass colour
4. Abomasal lesions
5. Lung lesions
6. Bursa swelling



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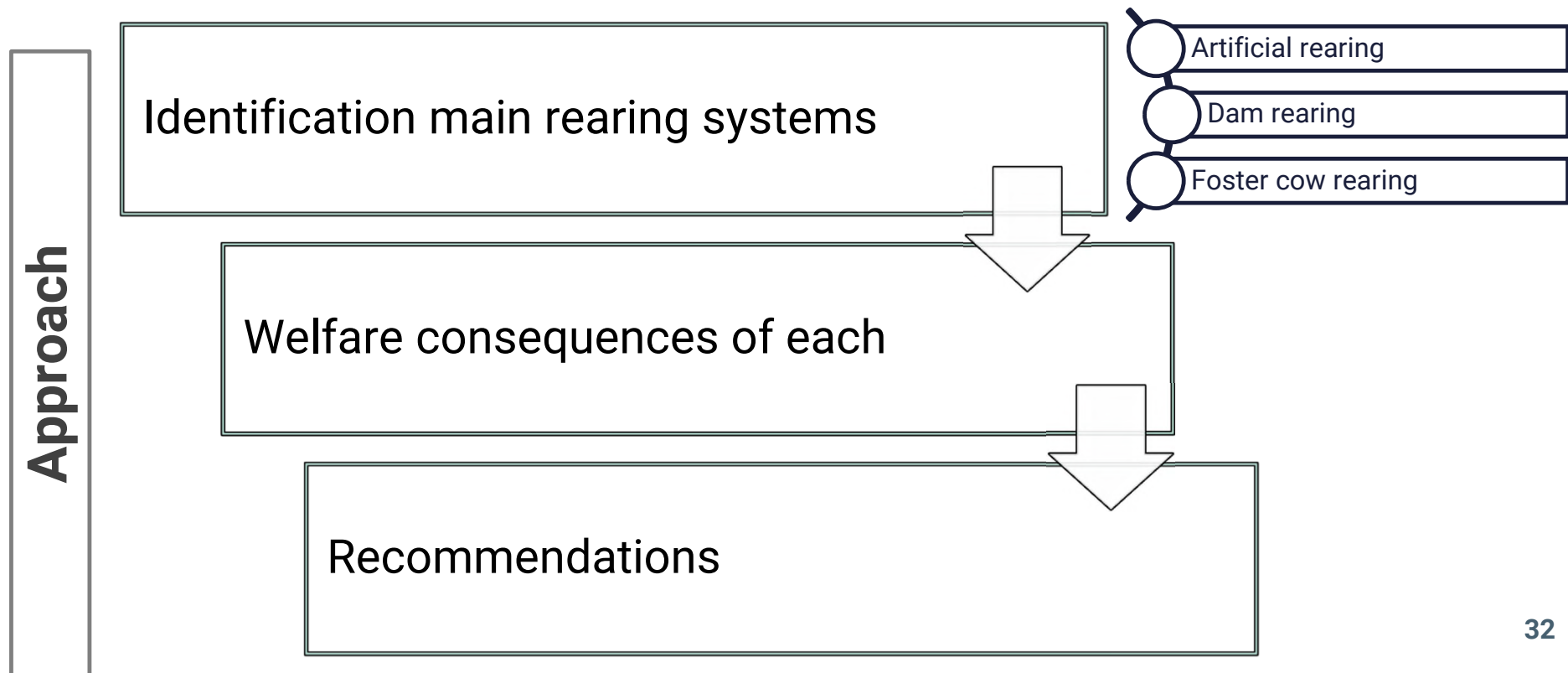
A photograph of a black and white cow and a black and white calf in a green field under a blue sky. The cow is on the left, leaning its head towards the calf on the right. The calf is lying down. The background is a bright blue sky with some clouds. The image is framed by a yellow curved border at the bottom and right.

SPECIFIC SCENARIO 3 – LIMITED COW-CALF CONTACT



SPECIFIC SCENARIO 3 – RISKS OF LIMITED COW CALF BOND

SPECIFIC SCENARIO 3. The welfare of dairy calves and the risks associated with limited cow-calf bond



See Section 4.18 of the Scientific Opinion for more details



SPECIFIC SCENARIO 3 – RISKS OF LIMITED COW CALF BOND

CALF REARING SYSTEMS

Artificial rearing

- Conventional system
- Separation at birth



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Dam and foster cow rearing

- Not common
- Duration of contact varies
- Foster cow rearing: 2-3 calves/cow



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SPECIFIC SCENARIO 3 – RISKS OF LIMITED COW CALF BOND

DAM REARING COMPARED TO INDIVIDUAL HOUSING

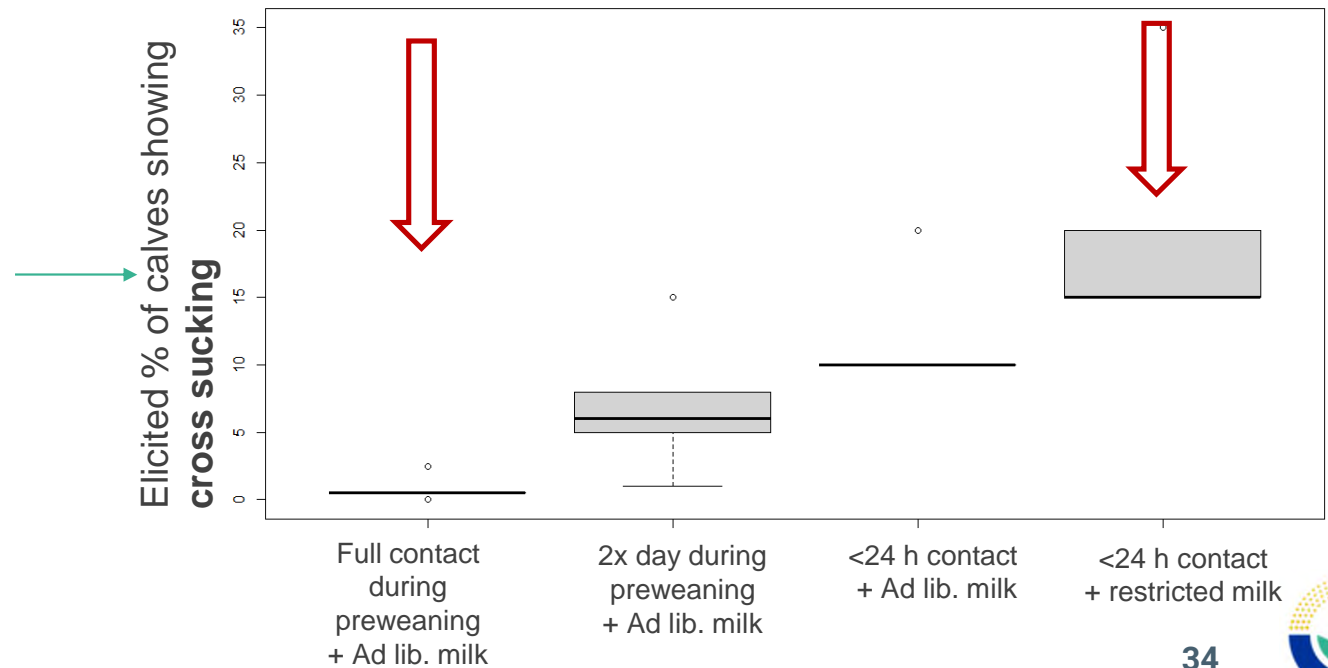
POSITIVE WELFARE EFFECTS

- Reduced transmission of disease
- Higher calf vitality
- More developed social behaviour
- Higher weight gain
- Reduced cross-sucking behaviour

NEGATIVE WELFARE EFFECTS

- Separation stress

% of calves showing cross sucking depending on contact with the dam



SPECIFIC SCENARIO 3 – RISKS OF LIMITED COW CALF BOND

DAM REARING COMPARED TO INDIVIDUAL HOUSING

POSITIVE WELFARE EFFECTS

- Reduced transmission of disease
- Higher calf vitality
- More developed social behaviour
- Higher weight gain
- Reduced cross-sucking behaviour

NEGATIVE WELFARE EFFECTS

- Separation stress



SPECIFIC SCENARIO 3 – RISKS OF LIMITED COW CALF BOND

RECOMMENDATIONS

- The calf should be kept with the dam for **a minimum of ~24 hours** and be housed with another calf after that.
- Prolonged cow-calf contact **should increasingly be implemented** due to the welfare benefits for calf and cow. In the **future**, calves should have contact with the dam during the **whole pre-weaning period**.
- Further research is needed to:
 - better understand how to implement cow-calf contact in a larger scale
 - identify the best options in practice
 - define best practices for foster-cow rearing



SUMMARY

Avoid individual housing

Keep animals in small groups of 2-7 animals of similar age for social behaviour.



Space allowance

Calves need to have enough space to be able to rest in a relaxed position - at least 3m² per animal.

To be able to perform full play behaviour they need 20 m².



Comfortable bedding

For their comfort provide a deformable bedding.

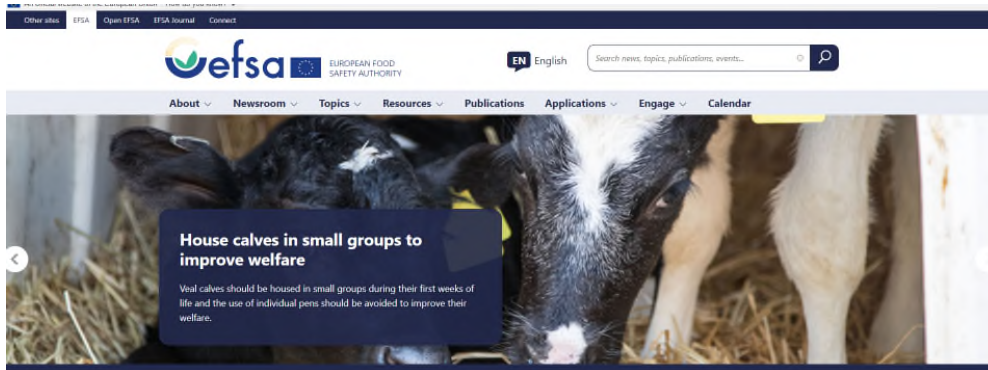


Cow-calf contact

Cow and calf need to be together for at least 1 day after birth.




More details in the Scientific Opinion [Welfare of calves on farm | EFSA \(europa.eu\)](https://www.efsa.europa.eu/en/sci/2023/01/01/welfare-of-calves)



<https://www.efsa.europa.eu/en>

[Publication Info \[1\]](#)



SCIENTIFIC OPINION

ADOPTED: 22 February 2023
doi: 10.2903/j.efsa.2023.7896

Welfare of calves

EFSA Panel on Animal Health and Animal Welfare (AHAW),
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Christian Gortazar Schmidt, Mette Herskin, Virginie Michel, Miguel Angel Miranda Chueca,
Barbara Padalino, Paolo Pasquali, Helen Clare Roberts, Hans Spoolder, Karl Stahl, Antonio
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Olaf Mosbach-Schulz, Yves Van der Stede, Marika Vitali and Christoph Winckler

Abstract

This Scientific Opinion addresses a European Commission request on the welfare of calves as part of the Farm to Fork strategy. EFSA was asked to provide a description of common husbandry systems and related welfare consequences, as well as measures to prevent or mitigate the hazards leading to them. In addition, recommendations on three specific issues were requested: welfare of calves reared for white veal (space, group housing, requirements of iron and fibre); risk of limited cow-calf contact; and animal-based measures (ABMs) to monitor on-farm welfare in slaughterhouses. The methodology developed by EFSA to address similar requests was followed. Fifteen highly relevant welfare consequences were identified, with respiratory disorders, inability to perform exploratory or foraging



ACKNOWLEDGEMENTS

- **EFSA AHAW Panel**

Søren Saxmose Nielsen, Julio Alvarez, Dominique Joseph Bicout, Paolo Calistri, Elisabetta Canali, Julian Ashley Drewe, Bruno Garin-Bastuji, Jose Luis Gonzales Rojas, Christian Gortázar Schmidt, Mette Herskin, Virginie Michel, Miguel Ángel Miranda Chueca, Barbara Padalino, Paolo Pasquali, Helen Clare Roberts, Hans Spooler, Karl Stahl, Antonio Velarde, Arvo Viltrop, Christoph Winckler

- **Working group welfare of calves**

Margit Jensen, Susanne Waiblinger, Elisabetta Canali, Christoph Winckler (chair)

- **Hearing experts**

Marta Brscic, George Stilwell, Joop Lensink, Laura Webb

- **EFSA staff**

Mariana Aires, Denise Candiani, Mariana Geffroy, Olaf Mosbach-Schulz, Yves Van der Stede, Marika Vitali

- **EKE support**

Karen Laing, Hans-Hermann Thulke



**Thank you for your
participation in this
Info session!**

