5. Meeting of the sub-group on calves and dairy cows

Fifth meeting, 14.07.2022, 9:00 to 12:00
(Hybrid conference)

– MINUTES –

Independent expert	Francesca Fusi
Civil society organisations	EDA Slow food
Business and professional organisations	Farm & Animal Health Copa Cogeca
Member States	Sweden The Netherlands Ireland Denmark
European Commission	DG SANTE – Colleagues from Unit G5, E4
Guest	Christoph Winckler (EFSA/EURCAW)

1. Welcome

The Chair welcomed the participants to the 5th meeting.

2. Presentation of legal requirements for feeding calves

General requirements for feeding calves

Annex I of Directive 2008/118 lays down minimum standards for the protection of calves regarding quantities and frequency for feeding. These requirements need to be more precise. The Commission would like to stimulate discussion and have views on how these requirements could be more precise.

3. The expert from the EURCAW ruminants and equines presented:

3.1. 'Factsheet on the provision of contact between individually housed calves including some examples'

The factsheet prepared by the EURCAW for ruminants and equines was presented providing recommendations for inspections regarding individual housing of calves to help MS to implement controls uniformly.

The background of this factsheet was the unspecific legal requirement of Article 3 of the Council Directive 2008/119/EC:
"No calf shall be confined in an individual pen after the age of eight weeks, unless a veterinarian certifies that its health or behaviour requires it to be isolated in order to receive treatment. (…).
Individual pens for calves (except those for isolating sick animals) must not have solid walls, but perforated walls which allow the calves to have direct visual and tactile contact;"

Individual housing of calves until the age of 8 weeks is allowed. Individual housing is common practice in dairy industry, using many types of individual pens. The length of period keeping calves in individual pens varies among Member states. Under such conditions, social contact between calves may be strongly restricted or impossible.

There is scientific evidence that social isolation of calves can be associated with behavioural and developmental problems, in context with e.g. feed intake, social competence, etc.
In normal behaviour in (near-)natural settings, social relationships with herd members develop rapidly and are strengthened over time. Calves interact and work for social contact during playing, grazing and resting. Time spent with other peaks between 2–7 weeks of age, which is the time they are currently isolated in many housing systems. Play behaviour (e.g. head butting, mounting, chasing) increases in frequency over the first 2 weeks of age.

Structural features of pens/hutches determine the quantity and quality of social contact between calves. This brings two central questions:

- What is the amount of physical effort needed by calves for establishing contact?
- Is a contact-seeking calf in (full) control over establishing contact?

To help assessing housing systems based on 'level of restriction' of contact, the EURCAW has prepared a factsheet presenting different categories of restriction and providing some recommendations for inspections.

The level of restriction is split in restriction of visual and tactile contact imposed on the animals (front wall, side walls, back wall, overall result), and ranked in five categories: 1 – no restriction, 2 – slight, 3 – moderate, 4 – strong, and 5 – complete restriction:

- Level of restriction of visual contact
  - Level 1. Calves can establish visual contact without effort and independently from the position or behaviour of other calves.
  - Level 2. Calves can establish visual contact only if they adopt specific and physiological posture independently from the position or behaviour of other calves.
  - Level 3. Calves can establish visual contact only if they adopt specific and somewhat strenuous but not constraining head postures independently from the position or behaviour of other calves.
  - Level 4. Calves can establish visual contact only if they adopt specific and inconvenient, constraining posture (contact may be related to the position of the other calves or not).
  - Level 5. Calves cannot establish visual contact.

- Level of restriction of tactile contact
  - Level 1. All calves are reared in social housing systems (group or pair housing).
  - Level 2. All calves can lick each other at least in the head and neck regions (and possibly at other body parts such as flank and back).
  - Level 3. Calves can reach each other in the full head region, but not neck or shoulders
  - Level 4. Calves can touch only their muzzles or small parts of the others body at other body regions.
  - Level 5. Calves cannot establish tactile contact.

From a welfare point of view, the level of restriction should not go beyond level 3.

The factsheet provides pictures and descriptions illustrating each level to facilitate a uniform implementation.

3.2. In a second presentation the Chair of the EFSA working group calves and dairy cows presented: 'Recommendations for feeding veal calves' – in context with the Commission's request for a scientific opinion concerning the protection of calves – conclusions and recommendations on provision of fibre

The Commission mandate requests EFSA to assess 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 fibres)

Annex I (11) and (12) of Council Directive 2008/119/EC laying down minimum standards for the protection of calves establishes quantities of fibrous food to be provided to calves. However, the term "fibrous food" is not further defined.

According to literature,

- Physico-chemical properties of fibre are important for ruminal function which are best described by neutral-detergent component of fibre (NDF) (Van Soest et al., 1991).

- Fibrous feedstuff such as fresh grass, hay, straw, or silage generally contain large amounts of NDF due to high content of cellulose, hemicellulose, or lignin. Cereals/corn (current feeding practice) contain NDF in low proportions.
- Other physico-chemical properties of fibre such as fermentability, solubility, viscosity or water binding capacity have been identified (Knudsen, 2001), but their precise impact on calves' physiology or welfare has not yet been determined.

In all cases, fibre is characterised in terms of NDF only.

The effect on welfare of an exposure variable can be quantified by comparing the expression of an ABM (e.g. behaviour) observed in the animals under no exposure at all and under high exposure.

The welfare consequences expected from an unexposed population and the welfare consequences after fibre restriction are:

- inability to chew and ruminate;
- Gastroenteric disorders (pyloric lesions, poor rumen development)

For the quantification of the effect on welfare, the EKE (expert knowledge elicitation) model is used by EFSA according to the following assumptions:

- The effect on welfare of an exposure variable can be quantified by comparing the expression of an ABM (animal-based measure) (e.g. behaviour) observed in the animals under no exposure at all and under high exposure
  e.g. rumination behaviour when access to fibre is unrestricted (no exposure) compared to very restricted access to fibre (high exposure)
- There is natural/random variability in the unexposed population
- The closer the demonstration of the behaviour to the one observed under unrestricted conditions, the better the welfare.

The unexposed population is a group of calves in a suckler herd, aged between two weeks and six months, with ad libitum access to pasture and fibre, and continuous access to the dam's milk. The highly exposed population is composed by a group of calves reared under a conventional white veal production system, aged between two weeks and six months, with restricted access to solid feed (total of 270kg - 300 kg dry matter (DM) per rearing cycle).

The ability of calves to chew and to ruminate reared for white veal meat, aged between 2 weeks and 6 months in white veal rearing systems when exposed to fibre restrictions (kg of NDF provided per day) is assessed by measuring the percentage of time a calf spends ruminating per day. Climate, breed, type of feed and sex have been identified as sources of uncertainty.

EFSA is currently collecting information on mean daily intake of roughage and the amount needed for calves aged between 2 weeks and 6 months to show "full extent of rumination time". This specific issue will be presented by EFSA for public consultation in September/early October 2022. The opinion is planned to be adopted in March 2023.

4. Discussion on the key animal welfare aspects of the presentations

Both presentations were very well received by the subgroup and generated an animated discussion.

4.1. Individually housed calves

EURCAW confirmed that some studies show implications of individual housing on animal welfare, but there is a lack of studies on the exact impact for each level of contact. It lacks data on individual housing of calves. It seems to be common practice but depends on the Member State., Austria keeps calves mainly individually housed including in organic systems without grouping until 8 weeks of age. In the Netherlands and France with larger producers, in most cases calves until 2-4 weeks remain on dairy farms, kept in individual boxes and are then kept in small groups up to seven calves. On veal calf farm calves are kept in large groups up to 60 animals (i.e. Netherlands and France). In Italy, male calves remain 2-4 weeks on dairy farms in individual boxes, and move then to fattening farms after 4 weeks, where they are kept in individual boxes till 8 weeks, and after in small groups up to seven calves; female calves remain in the farm of origin for milk production, mainly individually housed without grouping until 8 weeks of age.

The question of the potential positive impact of the cow-calf contact on small farms was raised by the subgroup. This will be investigated in the EFSA opinion that will be published next year.

The subgroup considered useful for the EURCAW to set benchmarks in the factsheets, however pointed out the need to be careful with the examples and pictures used to illustrate each level, as they can influence the inspectors' decisions. Using videos as QR codes for the factsheets, demonstrating calves' behaviour concerning visual and tactile contact (videos as animal-based indicators versus pictures as resource-based indicators) was seen as a clearer option to demonstrate which kind of pens complied with the legal requirements and which did not.

4.2. 'Recommendations for feeding veal calves'

The members of the subgroup considered remarkable that currently calves reared for white veal are ruminating only 1/3 of the time compared to their biological behaviour. They also confirmed that no legislation to improve this situation is currently in place in their Member States, except in Sweden where the legislation requires that calves have free access to roughage from the age of two weeks.

It was stressed that 45-50% of fibre is already provided by most of farmers, but the type of fibre provided does not allow to reach 45-50% of NDF. Most of the roughage provided by farmers is straw, due to economic reasons. However, straw should not be the only roughage because of mechanical problems. It was also confirmed that feeding calves solely with silage is not advisable as it inhibits the growth of rumen papillae.

The members of the subgroup discussed minimum iron levels in calves' feed. The physiological blood haemoglobin level is 6-8 mmol/litre. Levels below 4,5 mmol/litre can have serious consequences on calves' health and can lead to an increase in the rate of mortality. It, however, lacks scientific data on the consequences of levels of haemoglobin between 4,5 and 6 mmol/litre. Calves' oxygen metabolism and increasing efforts linked to fatigue have been investigated, and calves seem to try to compensate the lack of iron by an anaerobic metabolism. It was discussed at which stage of rearing the blood haemoglobin level should preferably be assessed. It was stressed that constraining calves to take blood samples causes them stress and pain and questions the significance of the results. Additionally, it lacks a common measure across studies, which makes it difficult to compare results. Further research is required in this area.

The members of the subgroup confirmed that there is no purely white veal on the market anymore, as it has meanwhile become common practice on calf fattening farms to feed roughage. In some cases, farmers inject iron and do not provide roughage, but the injection as such again has welfare consequences.

Denmark has stricter legislation than the EU Directive concerning the age for providing roughage, correlating with need for more water, which does not regularly seem to be provided.

The subgroup also agreed on the importance of the quality and hygiene of roughage for calves, and the usefulness to have a recommendation on the quality of food in the EFSA opinion.

The subgroup discussed possible welfare consequences of a lack of ruminating. These consequences may be frustration in animals leading to other abnormal behaviours such as increased suckling, licking equipment, tongue rolling, etc. A new Californian scientific study indicates that young calves not being provided with roughage within the first week after birth present tongue flicking at a very early age. However, association cause/effect is not clear because this ABM is not specific for a low level of roughage.

The questions of quality and quantity of feeding of milk substitutes/replacers and how to control its composition (proteins etc.) and the feeding frequencies was raised by the subgroup. Industry in some Member States is aiming at reducing the milk feeds to once a day, and replacing the legally required second feed with solid feed. This is a relevant topic to be clarified in the revision.

5. Questions to the group

Q1: To fulfil calves biological needs, should they be fed twice or three times a day, and respectively until which age?

The members of the subgroup positioned to a frequency of milk feeding of twice a day.

In veal system milk is provided twice a day. However, in dairy systems, some farmers can switch to once a day after four weeks, which was not the intention of the legislation, and leave roughage ad libitum (i.e. Ireland, Spain, Italy).

In Italy, there is no additional legislation, except for the transposition of the directive 2008/119/EC, however, farmers have instructions to feed milk twice a day if the total energy is provided only by milk; in the other cases, farmers can feed milk once a day (provision included also in checklist for official inspections).

In Sweden calves are in general fed milk twice a day. When weaning starts at 50-60 days of age, farmers may start milk feeding once a day. The goal is that the calf has doubled its weight when weaned. To this end, determining the amount of milk is important.

Denmark considers calves should be fed milk at least twice a day, but the amount and the duration of the feeds is still under discussion. Italy has established in its inspectors' checklist a minimum frequency of two times a day, and an ideal (optimal) frequency of (at least) three times a day. However, more or less 90% of farms feed twice a day, and only some dairy farms have automatised equipment for feeding three times a day or *ad libitum* (only for female calves in dairy farms). In case of male veal calves, milk is provided twice a day. Ireland will introduce in its legislation a minimum frequency of twice a day up to the age of at least four weeks.

In Italy, some dairy farmers feed milk only once a day: for example, feeding the entire daily amount of milk powder per calf (e.g., 500-750 g) in a single meal with half the water (i.e., 1.5 or 2.25 litres of water, respectively) usually used to reconstitute the same amount of milk powder in the case of 2 standard meals. During the day, calves receive the rest of the water and solid feed. Feed formulation consultants and nutritionists report that the benefits consist of fewer diarrhoea problems, drier bedding for longer, calves with more vitality because they lie down in the evening with the abomasum half-empty, early rumen development, better growth performance, less stress at weaning, time saved during evening work, etc. However, it seems that this management practice did not become very popular, perhaps because farmers were not fully trained or very skilled on it, or the milk powder used was not suitable for this purpose (not digestible and soluble enough), resulting in increased health problems and failure to save labour, etc. As a result, farmers usually returned to feeding milk twice a day.

The normal milk feeding frequency observed in nature is as follows:

- 1st month: 8-10 times per day (corresponding to 1 hour sucking per day, in total, compared to 10 minutes in standard milk feeding in farms).
- 5-6 months: 2-3 times per day.

The subgroup addressed the relevance of further data on the transition period from milk to solid feed, the biological need of suckling, and the options of how inspectors can assess the implementation of the frequency of milk feeding

As soon as milk intake is restricted, the inter-suckling behaviour starts or increases.

EFSA will look at the frequency of milk feeding in the upcoming opinion.

Q2: Which should be the speed to feed calves with milk?

There are no limits. In certain cases, farmers try to feed calves quickly, by enlarging the opening of the bucket to increase the speed to 2-4 litres in 2 minutes. In automatic systems, feeding can be split to have several meals per day and be regulated according to the calf's needs.

From a control view, it is very difficult to inspect and enforce the speed of feeding.

In the future, the Commission could require to EFSA an additional opinion on how milk should be provided to calves.

Q3: What are your views on open water surface for calves?

For young calves it is recommended to use teat buckets, to improve sucking. After, open surface should be used allowing calves to immerse their mouth.

The importance to ensure that calves can have access to enough feed and water of good quality at any time as precondition for good health was stressed.

Q4: Can you, based on your experience or national legislation, recommend minimum blood haemoglobin levels for calves? How often and when should the blood haemoglobin level be measured (i.e., twice during the fattening period)? Should it be measured for each calf individually or for groups of calves?

Members of subgroup confirmed that sampling haemoglobin levels in blood is a routine in the veal industry and part of the official controls in Member States like Italy, where there is a threshold of number of animals that can be below of the haemoglobin limit.

In Italy, it is recommended to perform control above 70 days in farm in samples of at least 20% of animals present in the group for each building with a maximum of 20 animals. Analysis must be performed for individual animals, and the average is calculated for the group of animals sampled. The minimum level of 4.5 mmol/litre must be reached. Farmers are obliged to perform additional analysis as self-assessment on a risk basis.

It was suggested that the haemoglobin concentration could be assessed with blood samples taken during slaughter, hereby avoiding pain and stress for the animals, ante mortem, for future corrective measures for the next batches. The subgroup members agreed that blood haemoglobin must be continued to be assessed even if legislation is amended (higher concentrations of NDF), as the periods for revised legislation to come into force can be long. The reliability of taking samples at the slaughterhouse should be evaluated: the haemoglobin value determined at the slaughterhouse could be influenced by several factors related to transport, such as the phenomena of stress-related haemoconcentration or dehydration of the animals, which could occur due to long journeys or due to high temperatures, as well as by the timing and conditions in the pre-slaughtering stages.

Q5: If the legal requirements for feeding roughage are adapted to calves' biological needs, will it be necessary to monitor blood haemoglobin levels?

There are no valid studies on this, but 1 kg of roughage per day is considered enough to reach the minimum level of 4.5 mmol/litre. However, it depends on the type of roughage. If calves are provided with straw only, reaching the minimum blood haemoglobin level will be more difficult.

In some cases, industry wash straw to take small fibre and increase digestibility. There is not enough knowledge on the impact of this practice.

Usually, blood haemoglobin levels are only monitored in veal calves, because at higher risk of this adverse effect; female dairy calves are not monitored.

Q6: Can you recommend indicators for assessing malnutrition of calves in respect to roughage including at the slaughterhouse?

In slaughterhouses, sampling blood was considered by the group difficult to implement as it must be done ante-mortem. On the contrary, verifying presence of anaemia (looking at the mucous membranes) was found a better solution as is not invasive and can be done in routine. This could be suggested in the EFSA recommendations.

Q7: Do you feel that consumer's' mentality and behaviour is changing? Is veal going to an end?

Veal industry certainly is not growing and most of its production, e.g. in the Netherlands is intended for export to other Member States. However, the subgroup has doubts of the production of veal disappearing entirely from the market and sees a chance that a regionalisation of rearing and slaughter of calves intended for the white veal market could improve animal welfare for calves.
Additional data on imports/exports of veal in Netherlands will be provided.
Italy still has an important population of veal calves (from both imports from other member states and national farms) raised for white and pink veal. Additional information will be provided on health and welfare issues of male veal calves, particularly in Italy.

6. Calendar for the next meetings

15 September 2022, 9:30 – 12:30
Mutilations: disbudding, dehorning and castration (good practice for e.g. anaesthesia, pain management, skills/training and competencies of staff)

17 October 2022, 14:30 – 17:30
Housing systems for dairy cows, ban of tethering, outdoor access or access to fresh air

17 November 2022, 9:30 – 12:30
Animal Welfare Indicators

15 December 2022, 9:30 – 12:30
Standard operating procedures