

CORE Organic ANIPLAN assessment protocol adapted from Welfare Quality®

INFORMATION TO ASK BEFORE THE ARRIVAL ON THE FARM

1. Ask the farmer for a short description of the farm: You need to have an idea of the farm and its organisation; so that you do not discover on the test-day that you will not be able to manage the situation (e. g. parts of the barn are not visible from the feeding passage or other parts outside of the pen, 3 different buildings in 2 different areas);

Further helpful information:

- Do you have the lactating cows divided into groups according to their performance (high yielding – low yielding)?
- How many lactating cows are in your main group(s) at present?
- Are there also any dry cows or heifers in the main herd – how many?
- Do you have a bull running with the herd? Is it possible to separate the bull from the herd while the individual scoring of the cows?
- At what time do you milk the cows in the morning- how long does it take?
- At what time do you deliver the fodder to the group of lactating dairy cows? Do you fix the animals afterwards (if yes, how long do you fix them)?
- How long does it take you to finish the daily morning routine in the barn?
- Do the cows have regular access to pasture?
- When was claw trimming performed the last time?
- Are there any special activities planned for the day of your farm visit that may have an influence on the behaviour of the animals (e. g. regrouping of animals, visit of a breeding adviser)
- Does the farmer have time for the management questionnaire on the day of your farm visit?

EQUIPMENT FOR FARM VISITS

- Recording sheets
- Stop watch
- Elevated observation chair (e. g. mobile stance, stepladder)
- Tape measure
- Stock marking device (pen or spray)
- Disinfectant
- Overall
- Gumboots
- Clipboard + pen

ANIMALS TO OBSERVE

- For **ADF, QBA and social behaviour observation**: all lactating cows;
→ if dry cows or heifers are running with the herd they are regarded as part of the lactating cows;
→ interactions of animals in heat are not counted for social behaviour observation
→ a bull running with the herd is regarded as a member of the group (interactions counted)
- For **clinical scoring** (body condition, locomotion and cleanliness scoring; integument alterations; health parameters): all lactating cows, dry cows and heifers that are running with the herd and separated groups of dry cows (e. g. in a different pen or building);

TIMETABLE FOR FARM VISITS

- (1) Avoidance Distance at the feeding rack (ADF)
- (2) Qualitative behaviour assessment (QBA)
- (3) Behavioural observations (resting and social behaviour)
- (4) Clinical scoring
- (5) Resources checklist
- (6) Management questionnaire

ON THE ARRIVAL

You need to organize your day on the farm and with the farmer:

→ perfect time to arrange a time for the management questionnaire

→ draw a layout of the barn and count the number of animals in each group. (Walk through the barn as unobtrusively as possible and do not distract animals with your presence!)

(1) AVOIDANCE DISTANCE AT THE FEED RACK (ADF)

Target animals

- all lactating cows
- if dry cows and pregnant heifers are kept with lactating animals they are part of the sample too;

Sample size

- try to get **70 %** of the animals of the herd;
- you need to differentiate between separated groups (for example of high and low yielding animals), so don't forget to enter a group number;

Procedure

Place yourself in a distance of 2 m (if possible) in front of the animal to be tested. The head of the animal has to be completely outside the feeding rack / neck rail.

Make sure that the animal is attentive or taking notice of your presence. If an animal is not obviously attentive, but also not clearly distracted, it can be tested. A way to attract the animals' attention is to make some movements in front of them (at the starting position).

Then slowly approach the animal (one step per second, step of approximately 60cm) with the arm held overhead in an angle of approximately 45° in front of the body. During the approach the back of the hand is directed towards the animal. Do not stare into the animal's eyes but rather look at the muzzle. Continue to walk towards the animal until signs of withdrawal or until touching of the nose/ muzzle. In case of withdrawal the avoidance distance is estimated (= distance between the hand and the muzzle at the moment of withdrawal). If you can touch the nose/ muzzle the avoidance distance is noted as 0 m.

Neighbour animals that react to an animal being tested, should be tested later on. One possibility to reduce this risk is to test every second animal.

You could be confronted with two main problems:

- *Groups can be fed at different times.* You can stop and restart or do it at different times. In bigger herds you can start testing the animals when at least 75 % of the cows are back in the barn after milking.
- *If you do not have 2 meters in front of the animals* for approaching them, than choose an angle of 45 degrees with the feeding rack, and start at a distance of 2.5 meters. If a distance of 2, 5 meters is not possible, still do the assessment but write down the maximum distance possible on the recording sheet.

Definition of withdrawal: The animal moves back, or turns head to the side, or pulls back the head trying to get out of the feeding rack; sometimes one can find head shaking;

Recordings

- In case of withdrawal: Recording of the avoidance distance estimated in 10 cm resolution (from 200 cm to 10 cm). If the animal can be approached very closely (1-10cm), this is all recorded as 10 cm.
- If animals can be touched, the avoidance distance is noted as 0 m.

Dos

- General rule: One should be able to take one's starting position without provoking a reaction of avoidance. Starting from 2 m was sufficient for the animals tested in Austria (all intensive systems). 3 m or more are recommended for shy herds.
- One has to make sure that it is always the hand that is closest to the animals during approaching; especially when being close to animals that are feeding or have their heads in a lower position one should bend a little in order to try to touch them; one has to make sure that animals do not react to the knee or the foot first because they are closer than the hand;
- Retest animals where the reaction was unclear; such animals should be tested some minutes later, in general, the later the better;

Don'ts

- Don't test obviously distracted animals.
- Lifting up the head in order to face the experimenter is no avoidance reaction unless the animal retreats at the same time. Therefore the test should not be stopped too early.

Practical tips

- For measuring and estimating distances more easily:
Lines drawn at a distance of 1m and 2 m from the animals' heads before test start (even before animals are attracted to / restrained in the feeding rack) could be helpful (one could also use ropes); larger distances can be measured with a measuring tape
- Confirmation of a withdrawal reaction: In order to be sure of the animals' reactions one should stop only when the animal shows clear signs of avoidance. Otherwise, the experimenter should continue approaching the animal a little further in the same speed, but should keep the distance at which the first avoidance occurred in mind and take this distance after having verified the reaction.

(2) QUALITATIVE BEHAVIOUR ASSESSMENT (QBA)

Target animals

- all lactating cows
- dry cows or heifers running with the main herd

Procedure

Familiarize yourself with the list of terms on the provided QBA rating scale. Make sure that you are basically comfortable with their meanings, and that there are no terms that you do not know or understand.

Divide the barn into segments for the qualitative behaviour observation. You do not need to observe the animals on an individual level. It is not a matter of assessing individual animals separately and then adding them up to a group assessment. It is a matter of assessing the group as a whole, assessing the expressive qualities at group level. (Therefore you probably will have larger segments for QBA than for social behaviour observations).

You will have a maximum of 20 min. of observation. The minimum amount of time per observation point is 2.5 min., i.e. a maximum of 6 observation points per QBA (for the calculation of the duration of 1 observation point: 20 min. are divided by the total number of observation points).

table 1: duration of observation per observation point in accordance to the number of observation points

Number of observation points	1	2	3	4	5	6	7	8
Duration of observation per observation point in minutes	10	10	6.5	5	4	3.5	3	2.5

Recordings

After finishing your observations turn away from the animals or walk out of the barn to do your scoring.

Next to each term, you see a line that is 125 millimetres long. It is a continuous line, there are no divisions or categories. The line is defined only by its left 'minimum' and right 'maximum' point. 'Minimum' means that at this point, a zero score, the expressive quality indicated by the term is entirely absent in any of the animals you have seen. 'Maximum' means that at this point, a 125 score, this expressive quality is pervasively dominant across all animals that you have seen in this particular unit. Note that in theory it is possible to give more than one term a maximum score; as explained above the terms are not mutually exclusive. Animals could for example be both entirely calm and content. However you will probably give most terms a score somewhere in between the minimum and maximum point. To score a term, draw a line with a good clear black pen across the scale at the appropriate point. Make sure this line crosses the scale at one point only.

Do not think too much, trust your sense of scale and proportion!

Please be aware when scoring terms that start with a negative pre-fix, such as uneasy. As the score gets higher, the meaning of your score gets more negative, not positive. A high score on uneasy means the animals are very uneasy, not easy.

Dos

- If you are very unhappy with the way you have scored a particular term, you can go back and cross your old score out and place a new score on the same scale. However please do not make a habit of this. It is not good if you start to think and hesitate too much about your exact scores.

Don'ts

- Do not compare your scores on different terms and try to 'match them up', this would just confuse you.
- During QBA no lying down movements are recorded. Concentrate on the QBA!

Practical tips

- If you are part of a team of assessors/inspectors, check with the other team members that you are all generally comfortable with the list; if not, discuss the terms until you reach a sense of consensus in how to understand and score them.
- Of course at times the actions of a few individuals will stand out from the crowd, for example when they are fighting, or playing, or panicking. You cannot really avoid this, and it does not have to be a problem. Always try and assess what you observe in the context of the larger group. Is the observed irritability just a minor, semi-playful incident, or is the atmosphere in the whole group tense and on edge? How frequently do these incidents occur, is it always the same individuals and the rest is fine, or do incidents break out between different individuals? All this will help you to assess the *overall level* or *intensity* at which a certain expressive quality is present in the group.

(3) BEHAVIOURAL OBSERVATIONS

Target animals

- all lactating cows
- dry cows and heifers running with the main herd

Procedure

I. Barn segmentation

Decide on the number of segments you will have to observe. In one segment there should not more than 25 cows to be expected. You have **a total net observation time of 120 minutes. Minimum** duration of observation **per segment** is **10 minutes**. If it is possible try to have not more than 6 segments on a farm so that you can do a repeat of your observations in the second hour.

Some examples:

- Total net observation time per **farm = 120 min.**
- Minimum of continuous observation per **segment = 10 min.**
 - a. 12 segments → each is observed for 10 min (no repeat possible)
 - b. 10 segments → each is observed for 12 min (no repeat possible)
 - c. 4 segments → each is observed for 30 min in total (15 min in the first hour and another 15 min in the second hour)
 - d. 2 segments → each is observed for 60 min in total (30 min in the first hour and another 30 min in the second hour)

table 2: Minimum number of barn segmentations for dairy loose housed according to number of animals in the barn/group/pen

No. of animals in the barn/group/pen	Minimum no. of segments
<25	1
26-50	2
51-75	3
76-100	4
101-125	5
126-150	6
151-175	7
176-200	8
201-225	9
226-250	10
251-275	11
276-300	12

II. Herd scan

Dependent on the number of segments and their observation duration **herd scans** (= number of feeding, standing and lying animals is counted over the whole herd/barn) are performed at the beginning and the end and approximately every 30 minutes. The herd scans follow the following time intervals:

table 3: time intervals of herd scans

Observation duration per segment/pen (in minutes)	herd scan interval
10, 12	after 3 segments/pens
15	after 2 segments/pens
20, 30	after each segment/pen

III. Segment scan

Before starting and after finishing the continuous behaviour observation in a segment/pen a **segment scan** has to be performed (=number of feeding, lying and standing animals in the observed segment/pen has to be counted). Animals that are lying, standing or feeding across the defined segments are counted in the section where the main part of their body is situated. Concerning **behaviour around resting** the number of animals lying partly/completely outside lying area is also counted in the course of the segment scans.

IV. Continuous behaviour observations

During the continuous behaviour observations incidences of **agonistic** (head putts, displacements, chasing, chasing up and fighting) and **cohesive behaviours** (social licking) as well as **sneezing** and **coughing** are counted.

Furthermore **lying down events** are recorded as well as the incidences of collisions with housing equipment during the recorded lying down movements.
 (Please find definitions of these behaviours in the annex.)

Interactions between animals in different segments are recorded if the actor's head is located in the focus segment. See example below:

The observer is observing segment 1. Cow B was not counted in the scan as located in segment 2. If she now starts licking cow A social licking is recorded. If, however, cow C, which before was counted as an animal of segment 1, starts licking a cow of segment 2 the licking act is not recorded because her head now is in segment 2.

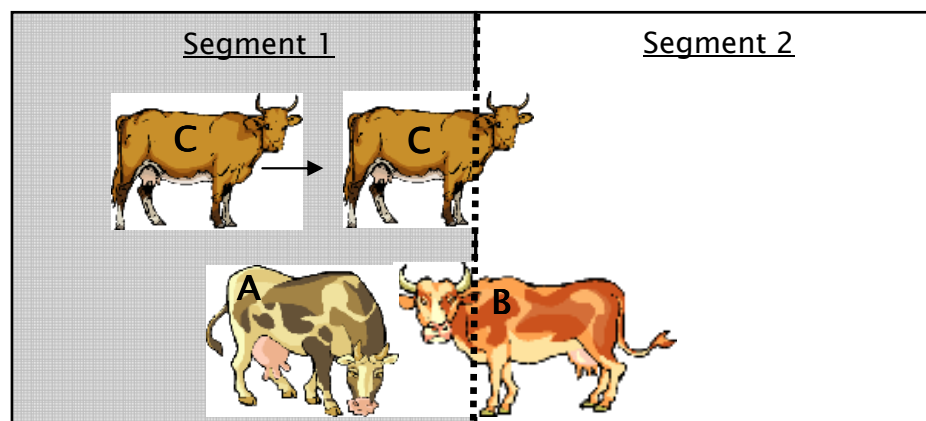


figure 1: interaction of animals in different segments

Dos

- The observer is located outside of the animal area either on the feed bunk on an elevated observation device or if available on another barn enrichment/structure that allows an overview on the whole barn so that each section can be observed under the same conditions. Before and during behaviour observations the observer moves through the barn as unobtrusive as possible to ensure not to attract attention of the animals and not to disturb daily routine.
- If you have to make a break during the continuous observation period (e.g. for going to the toilet etc.) you should keep it as short as possible as it has been decided to cut off the time from the total observation time if observation time for one segment is longer than 15 minutes. If observation duration for one segment is shorter than 15 min. make the break between two segments.

Don' ts

- If there are cows in heat present in the herd/group(s) and the farmer has no possibility to separate them they are observed as other animals in these groups (they are counted during the scan sampling). However, social interactions performed by and with these animals are not recorded.
- When you are doing your barn segmentation and there is no cow in one area of the barn you cannot exclude it from your observations. There is still the possibility that one of the cows get lost in this area while your continuous behavioural observations. (But you can also end up starring at an empty OLA for 15 min.)

Practical tips

- On average not more than 25 animals are to be expected in each segment at the same time. This can be done for instance by counting the feeding places and cubicles. On the other hand the segments shouldn't be taken too small – at least 5 animals to be expected!
In dairy tie stall systems the maximum number of cows to be observed in one section is 8 to 10 depending on the barn design and arrangement.
- Attractive areas with predictable higher animal density (e.g. around concentrate dispensers, brushes, ...) should be taken into account.
- Each segment should include parts of all available areas of the barn (feeding rack, resting area, activity area; see picture 1). However, accessible areas inside or outside of the barn which are not visible from the feed bunk become an extra segment (e.g. outdoor run).
- Record the duration of lying down movements and try to get as many as possible (at least 6-8).

(4) Clinical scoring

Target animals

- all lactating cows
- if dry cows and pregnant heifers are kept with lactating animals they are part of the sample too
- groups of dry cows that are kept separately

Sample size

- the sample size is dependent on the herd size; see table below

table 4: sample size for clinical scoring

Herd size	Number of animals to score (suggestion A)	If A is not feasible
30	30	30
40	30	30
50	33	30
60	37	32
70	41	35
80	44	37
90	47	39
100	49	40
110	52	42
120	54	43
130	55	45
140	57	46
150	59	47
160	60	48

Procedure

The clinical scoring includes the assessment of:

- integument alterations
- lameness
- cleanliness
- BCS
- other health parameters: nasal discharge, increased respiratory rate, ocular discharge, diarrhoea, vulvar discharge

Target animals have to be selected at random. If animals can be fixed in a feeding rack, they can be selected by choosing every n^{th} animal in the row(s). Otherwise, animals in all areas of the pen including standing, feeding and lying animals shall be considered. To simplify the assessment, animals can be marked with a stock marking device before or after assessing them.

The same animals can be assessed for the scoring of integument alterations, lameness, BCS, cleanliness and health parameters.

From a distance not exceeding 2 m, one side of the focal animal has to be examined in the five different body regions. A random side selection (left or right) has to be ensured (*We decided on the training workshop to score half of the animals from the right and half of the animals from the left side*). To prevent biased results, the side selection has to be done before the examination. In most cases, the side which is seen first when approaching the animal can be chosen.

Part I – Integument alterations

One side of the animal (excluding the bottom side of the belly and the inner side of the legs, including the inner side of the opposite hind leg, udder with teats in dairy cows → green areas in the cow-figure below) is scanned from the rear to the front.



figure 2: parts of the body that are observed for integuments alterations

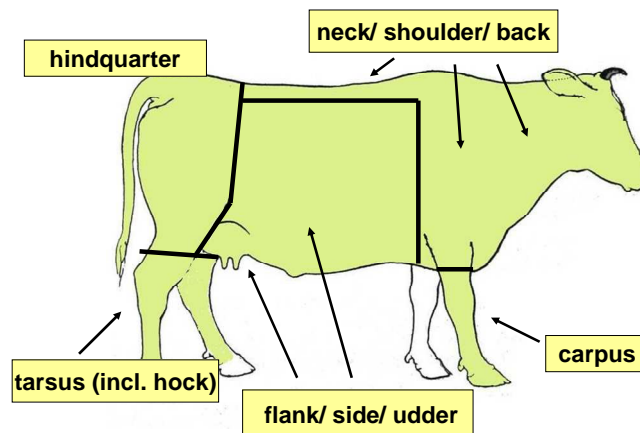


figure 3: different parts of the body that are assessed

Skin alterations of a minimum diameter of 2 cm at the largest extent are counted. There are three categories:

- a. **"hairless patch"**: area with hair loss or extensively thinned hair as a response to parasites, skin not damaged, hyperkeratosis possible
- b. **"lesion"**: area with damaged skin either in form of a scab or a wound, dermatitis due to ectoparasites or (partly) missing teats
- c. **"swelling"**: overt swellings

Alterations are recorded separately for all 5 body regions. Please note, that alterations of the coronary band are not allocated to either carpus or tarsus, but has to be recorded as 'other'.

In the case of more than 20 alterations per category only ">20" is noted. The maximum (">20") is also given if the area affected is at least as big as the area of a hand. So you have to sum up all alterations in your mind. If the affected area is larger than the area of a hand you have to score ">20".

If there are different categories of alterations at the same location (e.g. swelling and lesion at one leg joint) or adjacent to each other (e.g. a round hairless patch with a lesion in its centre) all these alterations are counted separately.

As a 4th category of integument alterations, the condition of the **claws** of the examined side of the animal is judged as overgrown claw being present or absent.

The criteria of a normal claw are:

- plane surface
- claw not bended
- two claws of one leg of the same length (in cows: about 7.5 cm)
- no or little space between claws
- contact to surface of the whole claw
- angle to ground near 50°

If 2 criteria of a normal claw are not fulfilled on at least one of the examined claws you score "overgrown claws".

Part II - Cleanliness

Observe the animal from the selected side and from behind. Score:

- a. the lower hind legs (including the hock),
- b. hind quarters and flank - upper hind leg, flank and rear view (excluding udder) including tail but not the hair tuft
- c. the udder
- d. the teats

as acceptable or dirty, according to the table and figure in the annex.

Please note, that for a., b. and c. a score of 0 or 1 whereas for d. scores of either 0, 1 or 2 are allocated.

Part III – BCS

BCS is assessed with a 5 point scoring system with 0.25 intervals (Metzner et al. 1993; Steinwiddler et al. 1997; Jilg & Weinberg 1998).

Part IV – health parameters

For other health parameters you have to assess the whole animal (not just one side).

Criteria are: nasal discharge, ocular discharge, increased respiratory rate, diarrhoea, vulvar discharge, overgrown claws, faeces consistency;

Part V - lameness

Identify a place where cows can walk freely in a straight line on a hard, level, non-slippery surface, on which they would normally walk, and where an observer can view them from the side, walking in a straight line.

Don't assess lameness when an animal is turning!

Score each animal as not lame, lame or severely lame, according to the categories below:

0 – Not Lame: Timing of steps and weight-bearing equal on all four feet.

1 – Lame: Imperfect temporal rhythm in stride creating a limp (irregular foot fall – uneven temporal rhythm between hoof-beats, weight not borne for equal time on each of the four feet)

2 – Severely Lame: Strong reluctance to bear weight on one limb, or more than one limb affected.

Don't forget to score dry cows as well!

ANNEX

ad 3.) Behavioural observations - social behaviour

Social interactions of animals in different segments:

Interactions between animals in different segments are recorded if the actor's head is located in the focus segment.

table 5: parameters and description for social behaviour observations

Parameter	Description
Head butt (HB)	Interaction involving physical contact where the actor is butting, hitting, thrusting, striking or pushing the receiver with forehead, horns or horn base with a forceful movement; the receiver does not give up its present position (no displacement, see definition below).
Displacement (DP)	Interaction involving physical contact where the actor is butting, hitting, thrusting, striking, pushing or penetrating the receiver with forehead, horns, horn base or any other part of the body with a forceful movement and as a result the receiver gives up its position (walking away for at least half an animal-length or stepping aside for at least one animal-width). 'Penetrating' is defined as an animal shoving itself between two other animals or between an animal and barn equipment (e.g. at feeding rack, at water trough, in cubicle). If after a displacement neighbouring animals also leave their feeding places but physical contact as described above is not involved, this reaction is not recorded as displacement.
Chasing (CH)	The actor makes another animal flee by following fast or running behind it, sometimes also using threats like jerky head movements. Chasing is only recorded if it follows an interaction with physical contact. If, however, chasing occurs in the context of fighting then it is not counted separately.
Fighting (FI)	Two contestants vigorously pushing their heads (foreheads, horn bases and/or horns) against each other while stemming their feet into the ground in sawbuck position and both exerting force against each other. Pushing movements from the side are not recorded as head but as long as they are part of the fighting sequence. A new bout starts if the same animals restart fighting after more than 10 seconds or if the fighting partner changes.
Chasing-up (CU)	The actor uses forceful physical contact (e.g. butting, pushing, shoving) against a lying animal which makes the receiver rise.
Agonistic total (AGO)	Dairy loose house systems & beef bulls: AGO = HB + DP + CH + FI + CU Dairy tie stall systems: AGO = HB + DP + CU

Social Licking (SL)	The actor touches with its tongue any part of the body (head, neck, torso, legs, tail) of another group mate except for the anal region or the prepuce. If the actor stops licking for more than 10 s and then starts licking the same receiver again, this is recorded as a new bout. It is also taken as a new bout, if the actor starts licking another receiver or if there's a role reversal between actor and receiver.
Horning (HO)	Head play with physical contact of two animals: The animals are rubbing their foreheads, horn bases or horns against the head or neck of one another without obvious agonistic intention. None of the opponents takes advantage of the situation in order to become a victor (Reinhardt and Reinhardt 1982). It is taken as a new bout if the same animals start horning after 10 seconds or more or if the horning partner changes.

Behavioural observations - Resting behaviour

Special instructions for the scan sampling

Animals that are lying, standing or feeding across the defined segments are counted in the section where the main part of their body is situated.

table 6: parameters and description for resting behaviour observations

Parameter	Description
Lying down movement	Lying down movement Time recording of a lying down sequence starts when one carpal joint of the animal is bent and lowered (before touching the ground). The whole lying down movement ends when the hind quarter of the animal has fallen down and the animal has pulled the front leg out from underneath the body.
	Collision with housing equipment during lying down During lying down the cow hits against housing equipment with any part of the body (usually hind quarter or side). The collision is obviously seen or heard.
Lying	Lying partly/completely outside lying area Number of animals that are lying with their hind quarter on edge of cubicle or deep littered area. The edge must clearly be pressing into the hind leg of the animal. Animals that are lying with hind quarter (both hind legs) or their whole body outside the supposed lying area (cubicles, deep littered area) are also counted.
Activity: Loose house systems	Lying Number of animals that are resting on belly and hind quarter or sitting dog-like on their hind quarter.
	Feeding/Drinking Number of animals located in the feed alley (feeding place) with their heads put through the feeding rack (or in case of neck rail head and ears are over feed bunk) plus the number of animals drinking and the number of animals standing with whole body in the concentrate dispenser. Animals standing in the feed alley but without having their heads in the feeding rack (over feed bunk) are not counted even if they are still chewing on fodder.
	Standing Number of animals that are in locomotion or standing (= all animals that are neither lying nor feeding/drinking).
Activity: Tie stall	Lying Number of animals that are resting on belly and hind quarter or sitting dog-like on their hind quarter.
	Feeding/Drinking/ Standing Number of animals that are feeding/drinking or standing.

The duration of a lying down movement is only taken when undisturbed by animal or human interaction and – in case of cubicles and littered systems – happens on the supposed lying area. During social behaviour observations or – if necessary – during the whole farm visit, record as many lying down movements as possible. In the end **at least 6** lying down movements should be recorded in **dairy cows**.

ad 4.) Clinical Scoring

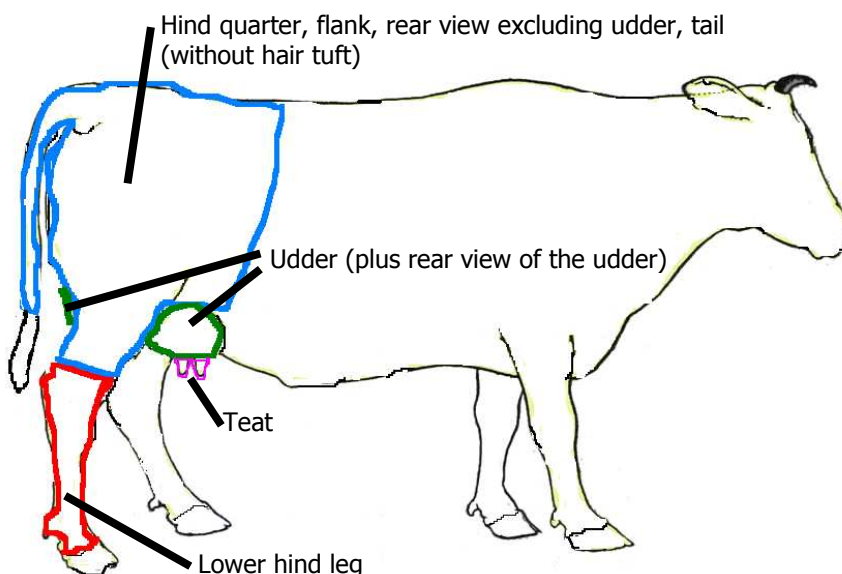
II. Cleanliness

table 7: classification of dairy cows as too dirty and acceptable

Region	Acceptable WQ Score 0		Dirty WQ Score 1
	lower hind legs (coronary band to hock)	little or no dirt	minor splashing
hind quarter and flank (upper leg (above the hock), flank and rear view excluding udder	no dirt present	minor splashing of dirt	separate or continuous plaques of dirt (a)
udder (not calves)	no dirt present	minor splashing of dirt	distinct plaques of dirt on udder or around the teats (a)
teats (not calves)	no dirt present		ANY dirt on teats (b)




(a) "Plaques" of dirt are three dimensional (have a thickness) and amount to the size of the **palm of a hand**, or more than half the area under consideration is covered

(b) Record "2" if the area that is covered with dirt is larger than a 5 Cent coin (diameter of 2 cm).



V. Lameness scoring in loose housed animals

table 8: classification of dairy cows as lame, severely lame and not lame

Score		Description
0		<p>Not lame Timing of steps and weight-bearing equal on all four feet.</p>
1		<p>Lame Irregular foot fall – uneven temporal rhythm between hoof-beats, weight not borne for equal time on each of the four feet. This creates a definite limp and the affected limb is immediately obvious. A favoured limb will move more quickly than the lame limb.</p>
2		<p>Severely lame Strong reluctance to bear weight on one limb, or more than one limb affected.</p>