

9

Developing your observation skills

This chapter discusses the importance of observational skills and practical ways to improve them, to achieve efficient animal husbandry skills, as well as improved animal health, welfare and productivity outcomes.

9.1 What to look for

There are many ways of assessing how well a dairy farm is being managed, even before you interview the farmer. This chapter lists many of these, highlighting the importance of developing our observation skills so we can independently more quickly determine how well the farm has been planned, constructed and run on a day-to-day basis. This can be broken down to several steps:

- the farm's physical facilities
- the general level of tidiness and cleanliness of the shed and farm infrastructure
- the physical state and wellbeing of the livestock
- animal management practices.

9.1.1 Observing the farm's physical facilities

- Location with respect to the nearest bulk milk-handling facilities.
- Year-round access by road.
- Proximity of cowsheds to forage sources.
- Daylong shade for stock in sheds.
- Shed design to aid natural ventilation (roof and walls).

- Air temperature, humidity, breeze, dust and level of ammonia (close to bedding).
- No cobwebs in roof area.
- Sufficient space for all stock to rest comfortably.
- Sufficient space to prepare and feed out formulated ration.
- Sufficient yards to house different categories of livestock.
- Adequate stock handling facilities, such as race and head bale.
- Shed design to minimise obstructions and hazards for stock.
- Ideally the shed has loose housing and/or free stalls.
- Ideally there should be an outside yard where stock can rest during the cooler evening.
- Cow laneways are non-slip but also do not cause sore feet and lameness.
- Good drainage inside shed leading to an outside effluent pond.
- Adequate area and bedding for stock to rest in.
- Evidence of adequate clean drinking water supplies for all stock.
- Evidence of hot water for cleaning milk-harvesting equipment.
- The 'calf kitchen' is clean and well organised.
- Office area for writing and storage of farm records and other paperwork.
- Relaxing/lunch area for farm staff.
- Some effective biosecurity measures are in place.
- Easy access to any farm records, for both production data and financial management.
- Other value-adding operations, such as biogas.

9.1.2 Assessing tidiness and cleanliness around farm and inside sheds

- Clean stalls, laneways, alleyways and feed bunks.
- Feed storage area clean and tidy with effective vermin control.
- No spilt feed around the farm where flies and vermin can breed.
- No muddy tracks where tractors drive.
- Farm equipment and machinery clean and maintained.
- Minimal rubbish lying around farm outside cowsheds.
- Minimal rubbish lying around inside cowsheds, feed storage and milk-harvesting areas.
- Lockable veterinary cupboard, maybe with small refrigerator for storing some drugs.
- Clean area for stock to lie down (may have just been cleaned specifically for visit).
- Good stock cleanliness; look particularly for any dried manure on the back and side of the udder, the thighs and hips and the legs and hooves.
- Drinking troughs are clean.
- Feed troughs are not full of old rejected forages and other feeds.
- The shed effluent system is organised to ensure all the effluent ends up in a pond, rather than just lying around at the lowest point of the farm at the end of the cowshed.

9.1.3 Assessing the physical state and wellbeing of stock

Many of the following ‘cow signals’ have quantifiable scoring systems which are fully described by Moran and Doyle (2015).

- Cattle lying in stalls and not in alleyways.
- All stock are bright and alert.
- Body condition; muscle and fat cover between the pin bones and the tail head, over the hips and covering the lumbar vertebrae.
- Locomotion and lameness score; by observing back posture, head and limb position and behaviour when walking.
- Hoof score; will need to be able to restrict the animal to lift up legs to inspect hooves.
- Leg scoring; assesses the stance of the hind legs.
- Rumen scoring; this quantifies the intake of feed and its rate of passage through the gut over the previous few hours.
- Rumination; over 60% of the cows ruminating and lying down.
- Manure scoring; pay close attention to consistency or moisture content and the level of digestion as evident from the physical state of the manure.
- Teat scoring; assess both the teat ends and the skin around the teats.
- Respiration rate to assess the degree of heat stress: this is quantified by standing behind the cow, counting the number of breaths over 10 s and multiplying this number by six. Respiration rates exceeding 75 to 80 per minute indicate some degree of heat stress; it is severe if it exceeds say 120 breaths per minute.

9.1.4 Assessing animal management practices

It is important that stockmen carry out animal handling practices in ways that are effective, humane and result in as little negative impact on the animals as possible, and that they exhibit proper care and attention to the needs of the animals under their care. This includes:

- appropriate milking management and milking hygiene
- appropriate mastitis management practices
- animals are moved at their own pace and not forced, and are handled with due care
- calves are dehorned appropriately
- cow bedding is maintained
- parasite control vaccination is administered appropriately
- AI is conducted appropriately
- obstetrical interventions are administered appropriately
- cow, bull, heifer and calf feeding and watering regimes and practices are implemented appropriately
- shed cleaning is implemented appropriately

- sick cattle are diagnosed and managed appropriately
- health management plans are implemented appropriately, including lameness prevention and management
- abnormalities and events (such as calving, oestrus, disease, cows panting, animals not eating, water troughs empty etc.) are recorded, reported and acted on as soon as possible
- diseases are treated and managed – such as mastitis and lameness.

9.2 Don't just look; observe your stock

As Hulsen (2011, 2013) states in his practical manuals on cow signals, the steps involved in using cow behaviour in farm management decision-making are:

- What do I see? This involves careful observations that should be described objectively and precisely. Is what I see normal or abnormal?
- How has this come about? Why is this happening? What are the causes?
- What does this mean? What should I do? What are the practical solutions to any obvious problems?
- In essence, it is *look, think, then do*.

Another reason for looking at cow signals more purposefully is to overcome the danger of 'farm blindness', that is thinking that what you see every day around the farm is normal. Farmers should always ask, 'What is normal on my farm, and is it the same for all farms?' It is essential then to make a point of including specific observations in your daily routine, discuss such matters with your farming colleagues and service providers and also to visit other farms to note how these specific observations may differ from your farm.

Astute observers should take into account:

- Understanding what is normal in anatomy/shape, posture, behaviour, movement, reactions so you are able to detect what is abnormal.
- Not just looking, but looking and observing. For example, you must notice all the signals that stock send out because they can all provide important information about cow wellbeing and comfort.
- Focused observation. You must look for things to evaluate. Ask the question 'Is everything as it should be or might this situation pose a potential risk?'
- Open-minded observations. Look at things as if for the very first time and forget any excuses and preconceived ideas.
- Compare your current observations with some form of standard that indicates whether additional action needs to be taken. You will then need to develop some standards for your particular situation.
- Observe from large to small, from many to few and from far to near.
For example:

- Is the herd uniform in size, coat condition, cleanliness, body condition, abdominal fill? If not, why not? Is any non-uniformity important?
 - How are the animals distributed within the building (particular cubicles, throughout the laneways, on the periphery of the buildings) and if it is non-uniform, why? Is it important?
 - How many cows are lying down in the cubicles? While resting, is it close to 85%?
 - How many cows show abnormal posture while walking? Is it sufficient to cause concern about lameness?
 - After looking at the big picture, zero in on certain areas of the shed or on specific cows worthy of additional observation.
- Ensure there is an observation routine in which every animal receives some attention, with cows (milking, dry and transition) observed at least three times daily and heifers and bulls at least twice daily.
 - If possible, take into account cause and effect. For example, if there is a physical deformity: what might have caused it, such as swollen feet and only access to concrete floors? (See Figures 9.1 and 9.2.)
 - In addition to your eyes, nose and hands, ‘paper information’, namely records, can greatly add to the observations. This highlights the value of good record



Figure 9.1: This cow is clearly suffering from a deformed hoof, which will adversely impact on her performance.



Figure 9.2: An old cow with permanent skeletal deformities as a result of a lifetime of tethering.

keeping that can be easily accessed to supplement the physical signals emitted by the cow.

- The shed layout should be designed for easy observation such as having gaps in feed barriers and perimeter fences and a centrally located cattle crush for ease of closer individual animal observation, if necessary.
- Record the key observations and any follow-up actions. Writing things down is recommended as it forces you to more clearly describe what you see and facilitates information exchange with farm staff and, if necessary, veterinarians or other professionals. For example, Figure 9.3 indicates a problem with a cow lying across two free stalls.

9.2.1 Signs of animal wellbeing

Assess whether the herd is uniform or if there are marked differences between animals. Pay attention to:

- Animal development: are heifers much smaller than the cows? If so, focus more attention on heifer rearing.
- Body condition: when more than 10% of the cows are too fat or too thin. This indicates a long-term imbalance between feed intake and utilisation. Focus on feeding regime, trough space, availability of feed during the day, hoof health, the way cows select their feed and dietary fibre content.
- Hair colour, coat shine and cleanliness: a glossy coat is a sign of a healthy animal. A dirty coat is always a bad sign, and can indicate things such as the



Figure 9.3: There is insufficient sand bedding in this free stall because cows can lie across two free stalls.

need to change the bedding, scouring from illness or poor ration formation. Hair missing on legs may indicate poor bedding.

- Abdominal and rumen fill: these indicate feed intake over the last 24–48 hr. Why did the cows eat less? Are we dealing with a risk group (see Section 9.4.2 below)? High yielding cows and those close to calving must reach their optimal feed intake as soon as possible.
- Abnormal posture and gait may indicate abdominal or leg pain. Which leg is painful? Is it more than one leg or one cow?
- Signs of boredom, for example constant licking or tongue extensions, head pressing, rocking etc. Possibly install back scratchers and other cow ‘toys’.
- Other signs: are there common abnormalities in the herd? For example, consistently located lump on many cows’ shoulders could indicate improperly constructed or installed feed yoke, or the cows have to reach too far into the feeding place to get their feed. Ulcers from lying indicate a need to improve or change bedding.

9.2.2 Logic of cow signals

There are generally three reasons for specific cow behaviour, namely:

- It satisfies a **need** and the cow wants something, for example she is eating, wants to lie down or is just plain curious.
- It is a reaction to a **stimulus**, for example she tries to avoid being physically hurt so she moves away from people or dominant cows or even jumps after touching an electric fence.
- It is due to a **physical urge** caused by pain, disease, hormones or she may be due to calve down.

These help answer the question, ‘Why is the cow behaving in a certain way?’ If you do not know whether such behaviour is normal, compare the cow in question with other cows on your own farm and then on another farm to assess the possible reasons in a completely different situation.

As genuine cow signals are repeated, for example kicking off a milk cluster only once may mean a single cow is overreacting, but does she do it at every milking and if so, why? If it is repeated many times, then there must be a common cause such as over-milking, vacuum level is too high, teat injuries, stray electric voltage or even severe fly irritation.

If a cow looks as if she intends to do something, makes an attempt to do it but then stops, there must be a reason why she did not follow through her intention. What were the circumstances or stimulus or stimuli that made her change her mind? Learning to recognise normal behaviour and then the things that might inhibit this provides valuable information about the underlying relations in a herd, housing or health of a cow.

An observation that defies logic can be an extremely valuable cow signal. Hulsén (2011) calls these unclassified notable observations (or UNO, ‘you know’). At first glance these findings may appear to be insignificant, but on reflection and further consideration, the observation can become important. If it can be a potentially harmful UNO, it justifies an explanation. For example, if particular cow drinks water from dirty puddles, she must be thirsty, so providing additional or more accessible fresh drinking water would solve this problem. There may also be a mineral deficiency. When evaluating UNOs, use the same three steps listed above, namely:

- Describe exactly what you see.
- Ask yourself, or someone else, what things may have caused this?
- Determine what influence the signal has on comfort, health and production, and decide whether or not to take action.

Hulsén’s (2011) book has many ‘take home messages’ and the key ones have been summarised in Table 9.1.

Table 9.1. ‘Take home messages’ about how cows and humans communicate with each other.

• Don't just look ... observe.
• Like cows, use all your senses when observing; ears and nose as well as eyes.
• What do I see, why has this happened, and what does it mean?
• Observe from large to small, from many to few, from far to near. Then do this in reverse.
• If cow signals are genuine, they will be repeated.
• Why is a cow doing this? Does it satisfy a need, is it a reaction to a stimulus, is it due to a physical urge?
• Cows are herd animals, so tend to do things simultaneously, but they also form smaller groups within herds, generally based on social order.
• Cows use subtle signals to indicate their social 'class' or ranking (dominance or submissiveness).
• Conflicts often occur between cows of similar rankings.
• Cows tend to moo when they are on heat or are hungry.
• Each cow has a personal space and this varies in size between breeds and their feeling of security and trust.
• Cows feel secure when they know they have plenty of feed, they have escape routes and know the person.
• Cows feel insecure on slippery floors, when very lame and when in presence of unpredictable personnel.
• The presence of cobwebs in the cowshed is indicative of low air movement, hence poor ventilation.
• If more than 10% of the resting cows are standing, stall comfort needs to be improved.
• When cows lie down, up to 30% more blood circulates through the udder.
• Ration formulations rarely correspond to what cows actually consume. So they only act as a starting point and need to be verified and modified on the farm.
• The body language of the cow is the best management adviser. If you can read the cow, you know what to do.
• Cows will tell you what they want.

9.2.3 Indicator animals and locations

Indicator animals are those that belong to certain groups of stock on the farm that are at greater risk than others. They are often the first to send out signals indicating something is wrong. Observing abnormal behaviour from members of these high-risk groups can provide advance notice of a problem. For example, high-yielding milkers will be the first to show up a problem in the formulation of the ration, through unexpected drops in milk yield.

Indicator animals can also be used to monitor the likelihood of a potential problem occurring on the farm, such as a shortage of forage might first become

apparent with the changes in milk yields in heifers in the milking herd. Poor handling may first become apparent when previously bolder cows are slower to enter the dairy.

Risk locations on the farm can identify where stock are more likely to be injured, such as a long rough track where small stones can injure hooves, or the calf shed where sudden changes in weather can upset calf wellbeing.

There are times of greater risk for different stock groups on the farm. These can be related to:

- the season, such as the middle of the dry season when soil moisture levels are at their lowest
- a particular date, such as the first extremely hot day in summer
- stock age, such as at weaning time in milk-fed calves
- stage of lactation, such as when the first insemination is usually due.

Additional observations (and actions if necessary) and routine preventative measures can reduce stress during these times to limit any likely problems. Responding rapidly to such problems can prevent serious consequences. It is important to plan ahead to assess whether everything is as it should be and potential problems can be quickly detected and acted upon.

9.3 Signals of good and poor health

When assessing cow health, proceed from large to small. It is best to observe with an open mind rather than make judgements or excuses. Having someone else come and look with you can help you see more and draw better conclusions. Appendix 2 presents pictures of cows in good and poor health.

Signals of good cow health include:

- The cow is alert and active, she does what she wants to do and is aware of her surroundings. Her eyes and ears are attentive and she is curious about noise and other stimuli.
- She has a glossy, smooth, clean coat without any blemishes. Cows that do not feel well soon lose the shine from their coats and their hair may stand on end.
- She has a good appetite and drinks well. Food intake is evident from the rumen and abdominal fill. If food intake is poor for a long time, the cow will lose weight and, eventually, her body condition. When she is not drinking enough or is losing excessive fluids, the eyes become sunken and the skin becomes tight.
- She walks and stands without any signs of pain or discomfort. When in pain or lame, a cow arches her back and is reluctant to move. Irritation in the pelvic area causes the cow to hold up her tail. If having difficulty walking, the cow first makes movements indicating she is about to walk, followed by obvious head movements when she starts walking.

- The cow is well cared for, with good housing. Cow signals such as overgrown hooves, mange and lice are indicators of poor care and should have been attended to long ago. Unclipped udders and backs, and dung caked on the cow's skin all suggest a lack of care.
- Appendix 2 also provides a summary of good cow and poor health and welfare.

Farmers often notice sick animals because they look or act slightly differently from other stock in the group. The earliest signs are subtle, requiring skill and experience as well as effort to recognise them. It is important to look specifically at animals in risk groups and at risk times.

Cows in negative energy balance have elevated levels of acetone or ketones in their blood, milk, urine and on their breath and show nervous signs. Some people can smell acetone, even when several metres from the cow.

A high body temperature is an early and clear sign of disease and is part of the immune response and inflammatory process. A sick cow that is not running a temperature may have a digestive disorder or could be in shock, which occurs when blood circulation is failing. In that case, the cow is cold to the touch especially her ears, lower limbs and udder. Taking her temperature should be the first step in any diagnosis.

When in pain, stock try and reduce the pressure on the sore part, take shallow and rapid breaths and are less aware of their environment. They also eat and drink less, showing signs of dehydration. They will often withdraw from the group and, in the shed, choose to lie in a stall. Lamé cows are more easily startled because they are less able to get away and this becomes very obvious on slippery floors.

9.4 Cow signals at the feed trough

Cow nutrition focuses on achieving maximum dry matter intake and a healthy rumen. There are many factors contributing to rumen health. Nutritionists tend to focus on issues such as ratio of energy to protein and ensuring the ration has sufficient fibre and minerals, but astute farmers should consider all the factors that can influence a cow's eating behaviour.

Calculated rations rarely correspond exactly to what the cow actually consumes, because of natural variation and the need to make assumptions. Therefore, the ration calculation only acts as a starting point, which needs to be verified and possibly modified in the shed.

When evaluating nutrition, health and production, you need to look to the past as well as the present with the aim of achieving even better results in the future. Information from the past helps you to learn and to understand the current situation. It can be used as the basis for setting new goals such as: 'Next year I want to produce 50 L more milk per cow and also halve the feet problems.' The cow signals you notice can be used to evaluate the current situation.

Overcrowding at the feed bunk results in increased aggression between cows. This leads to hoof damage and lameness as less dominant cows try to avoid dominant animals by turning away from them, causing them to twist their rear feet on an abrasive surface (concrete). Increased aggressive interactions can lead to even more severe claw damage. The potential for laminitis also increases as cows may consume fewer, but larger, meals or even have reduced feed intakes and spend more time on concrete rather than lying in the stalls. Headlocks reduce this aggression and improve access to feed by socially subordinate cows during peak feeding periods, by offering some physical separation between adjacent cows.

9.4.1 What nutritional signals to look for

A high yielding cow giving 30 L/day of milk has a rumen volume of 150 to 200 L and each day, consumes ~22 kg of dry matter and passes ~35 kg dung.

When looking backwards, important cow signals include:

- changes in body condition scores
- annual and monthly production figures and milk records
- number of metabolic diseases, such as displaced abomasum, milk fever and ketosis
- total number of illnesses
- number of cows culled with the reason for culling
- fertility records.

When assessing the situation and making changes, the important cow signals (and what they indicate) are:

- rumen fill (feed intake and rate of passage)
- milk production today and yesterday (feed intake and energy to protein ratio)
- dung consistency (feed intake and digestion)
- selective feeding (well-mixed ration and palatability of ingredients)
- daily feed residues (should be 5 to 10% of feed offered)
- feed wastage (feed intake and selective feeding)
- chewing the cud or rumination (fibre)
- hoof health (locomotion score)
- heat stress.

Close investigation of the cow's body fill around the abdomen can provide a guide as to how much a cow has eaten today, this week and this month (Hulsen 2013).

- A cow that has eaten well has a good rumen fill and belly fill.
- A cow that has not eaten enough **today** has a reduced rumen fill. This is apparent from the depressed left flank, located at the back of the ribs under the rear lumbar vertebrae, just in front of the cow's hip.

- A cow that has not eaten well this **week** has a reduced belly fill. This is apparent from the depressed abdomen, located midway down the abdomen under the ribs.
- A cow that has not eaten well this **month** has a reduced body condition score.

9.4.2 Risk groups

On every farm there are groups of animals that are susceptible to shortcomings in the ration. These groups then require closer monitoring than others. They can also be used as a means of monitoring risks, as indicator animals. Separating risk groups from the rest of the herd reduces the risks. For example, freshly calved cows and heifers should be separated from the rest of the milking herd.

The four main groups of risk animals are:

- **Heifers:** Risks include inadequate feed intake, acidosis and hoof problems. Rations too high in energy or protein result in udder oedema and soft hooves. If the mineral ratio is wrong, this may also contribute to oedema. In addition, these animals may not eat enough forage compared to concentrate, a particular problem with insufficient space at the feed barrier. This can lead to laminitis, which increases the probability of hoof problems. Following calving, these heifers are often bullied causing stress, low immunity, lameness, reduced feed intake and loss of body condition.
- **Freshly calved cows:** Risks include milk fever, ketosis and fatty liver, metritis and mastitis. If these cows do not eat enough soon after calving, they need extra care and attention. Calving down in a dirty pen can lead to udder and uterine infections.
- **Cows in first two months of lactation:** Risks include inadequate energy intake, acidosis, ketosis and displaced abomasum. During the first 6 to 8 weeks of lactation, low forage and high concentrate intakes can lead to acidosis. The acidic rumen is poorly filled, does not contract and the contents are mushy. The dung shows the signs of poor feed digestion, smells acidic and alternates between thick and thin. Cows do not ruminate properly or for long enough so often discarded cud is seen in the pen.
- **Cows at end of lactation:** Risks include getting overfat and reducing concentrate intakes too quickly. Condition score, milk fat and protein levels should be monitored. Getting too fat is due to too much energy and not enough dietary protein or a ration that is too rich for the level of milk production.