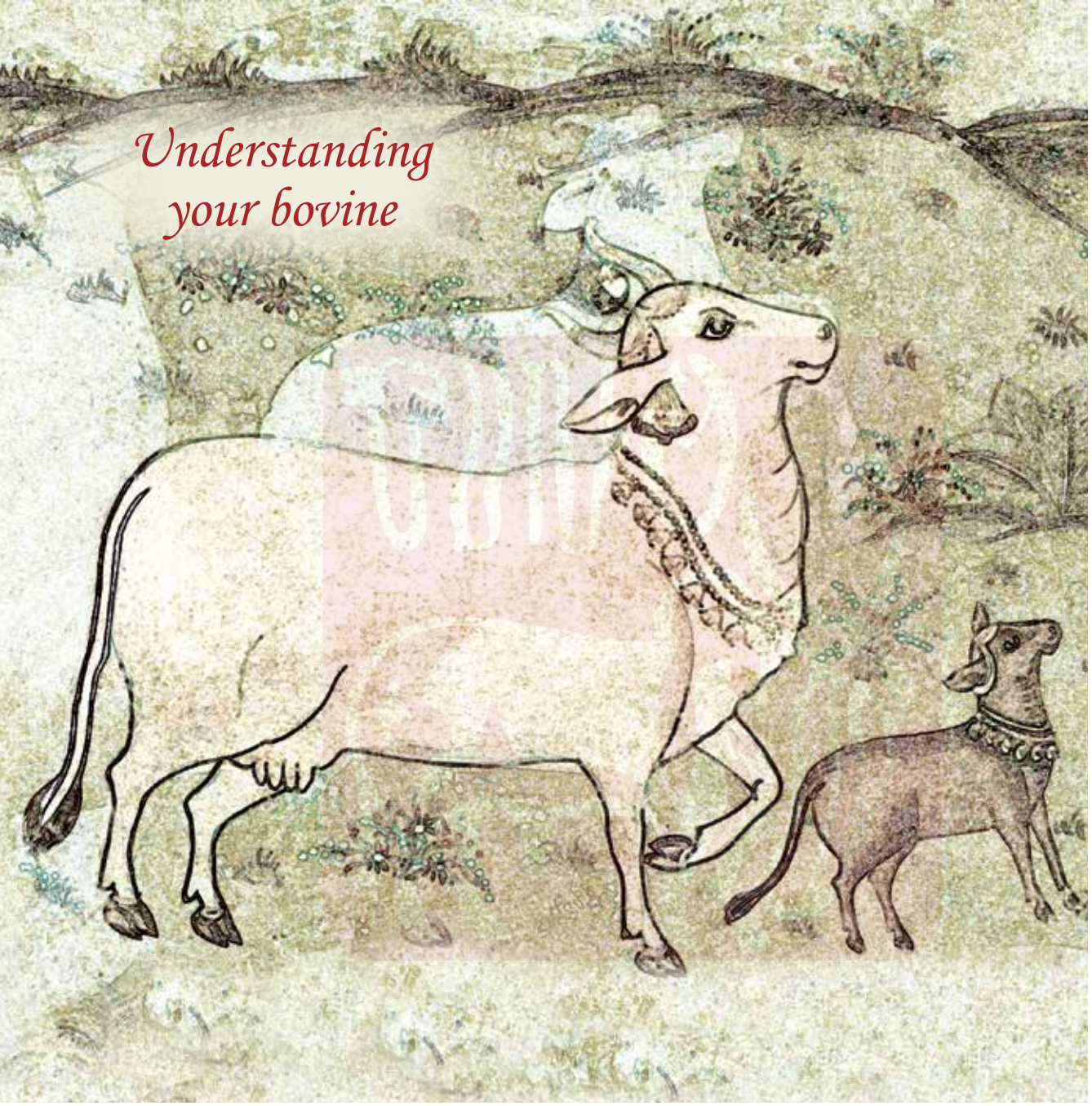
Understanding your bovine

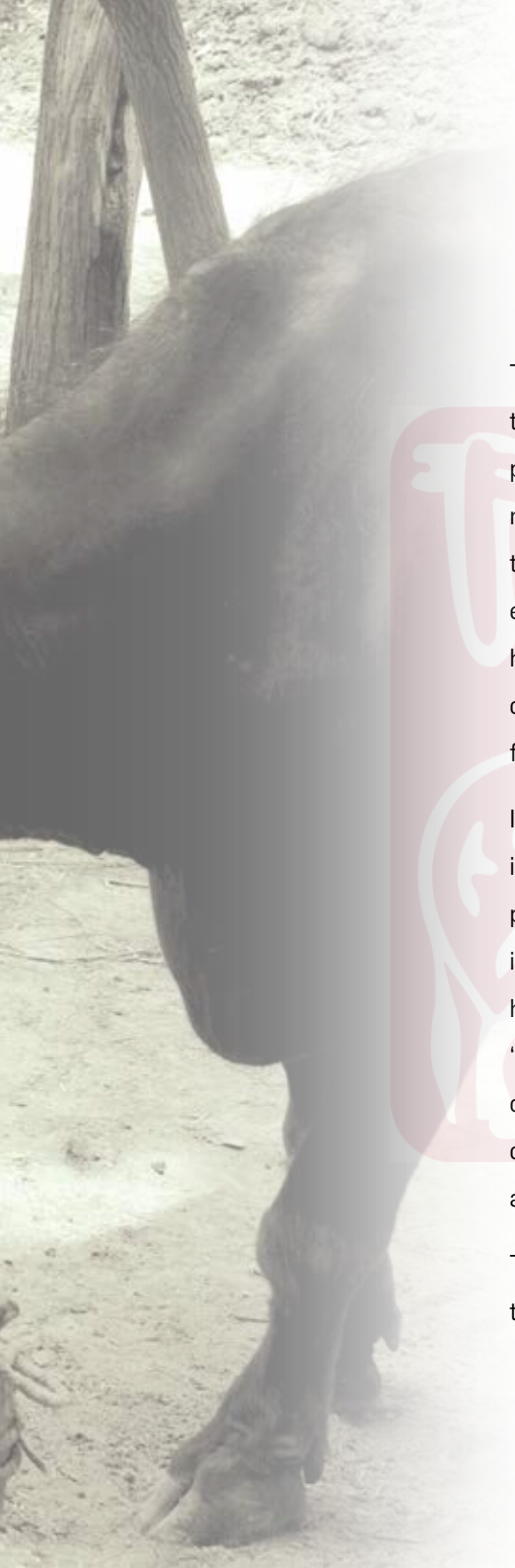


More care more milk

NATIONAL DAIRY DEVELOPMENT BOARD

Oh Cows! With your milk and ghee you make the physically weak strong, and nurture the sick to health. With your sacred utterances, you purify our homes. Your glory is discussed in gatherings.

– Atharvaveda

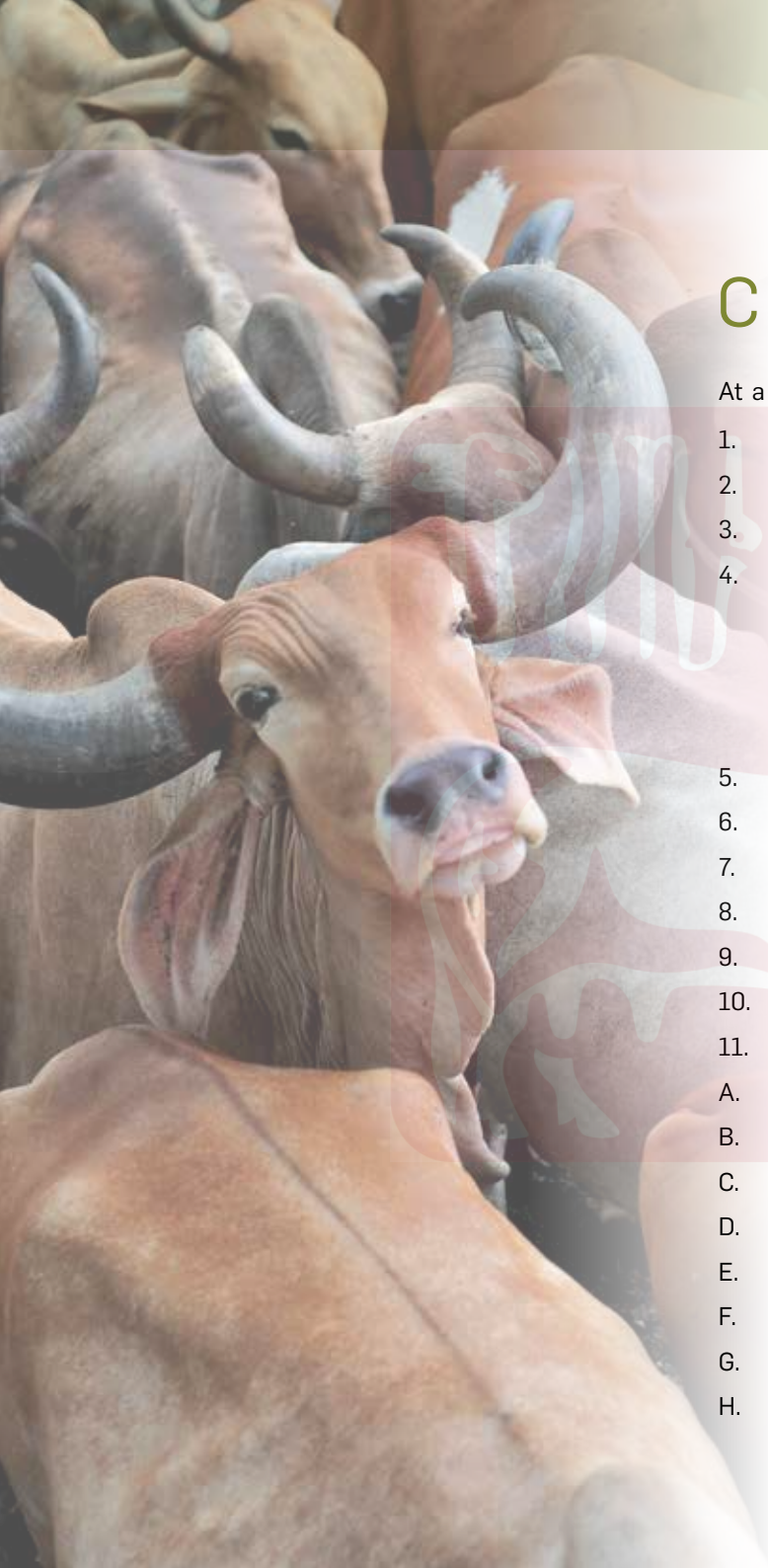


Introduction

The National Dairy Development Board has always been working for the uplift of poor and marginal farmers who form the bulk of the milk producers in our country. These farmers who mostly own one or two milch animals are dependent on the income from its milk for supporting their livelihood. The importance of a healthy animal cannot be stressed enough for a profitable business in dairying. Keeping this in mind, NDDB had developed a 'Handbook of Good Dairy Husbandry Practices' which contains all the basic information on animal health, breeding, nutrition, fodder production and conservation.

In addition to having the basic knowledge on scientific dairy husbandry, it is very important that the dairy farmers also understand the various pointers exhibited by their animals from time to time, which if correctly interpreted communicates enough on the management, feeding, health, hygiene practices, levels of discomfort etc. The handbook on 'Understanding your bovine' has therefore been developed with the aim of creating an awareness on these easily discernable signs so that necessary corrective measures can be taken well in advance to avoid losses, which at times could be catastrophic.

This handbook would be helpful to dairy farmers who continuously strive to improve their dairy husbandry practices.



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At a glance

An animal is able to communicate its well-being through a plethora of signs that the farmer consciously or unconsciously interprets as good or bad.

Interpreting these pointers which have been time tested and are measurable would be an important milestone in developing the 'gut feeling' of the farmer regarding the health and well-being of his/her animal into a more resolute and correct understanding of the state of the animal.

Various pointers reflect different aspects of management like feeding, housing, space availability, changes in routine, health, hygiene and normal physiology, any deviation of which should be viewed seriously and veterinary care solicited. A summary list of such signs and their relevance is given in the table below.

S.no	Pointers	Relevance
1	Health	Indicates feeding and management practices
2	Physiology	Indicates general health, feeding practices, diseases, metabolic conditions, heat /cold stress, changes in routine, deficiencies, housing , insect menace etc.
3	Body condition	Indicates general health corresponding to stage of lactation, feeding practices, probability of occurrence of metabolic diseases or reproductive conditions post calving etc.
4	Calving	Helps identify abnormal signs that require immediate attention
5	New born	Helps identify abnormal signals that require special attention
6	Feet & locomotion	Indicates feeding, hoof management, flooring, housing etc.
7	Rumen fill	Indicates ailments, inadequate feeding etc.
8	Feeding and manure	Indicates imbalance in ration formulation, metabolic diseases etc.
9	Hygiene	Indicates cleanliness in the shed
10	Teat end	Indicates milking practices
11	Heat stress	Indicates level of stress due to heat
12	Housing	Indicates housing management in relation to flooring, ventilation, space requirement, proper placement of mangers and railings, effluent disposal, insect menace etc.
13	Vocalizations in stress and pain	Indicates the psychological status, disease condition and the pain source

1. Health pointers

A healthy animal communicates its wellness through health indicators which can be easily discerned by the farmer.

The muzzle of the animal should always be cool and moist.

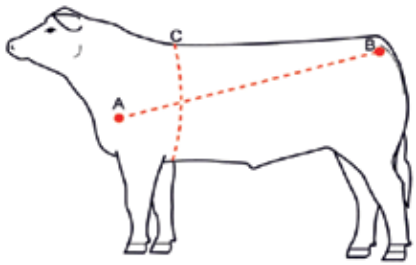
A brief description of the health pointers are given below:

Description	Health pointers
Muzzle	Cool & moist with frequent licking
Eyes	Bright, clear and not runny (no discharge), crusty or bloodshot
Breathing	Should be regular and not laboured
Coat	Glossy, clean and un-matted, free of ticks/lice, other parasites or eruptions. Coat discolouration is an indication of mineral deficiency ; ruffled coat is an indication of worm infestation
Appearance	Average weight of the breed; should not be emaciated or thin
Movement	Walking should be easy and free of limps; should not have slow or uneven gait or hunched positions while sitting; the animal should be able to rise from seated positions with ease. An animal in normal gait will place the hindlimbs where the forelimbs were while walking; a lame cow may either under-reach or over-reach
Udder	Size isn't necessarily an indicator of a good udder. It should sit forward with prominent milk veins, not sag and not be too meaty. The udder should not show too much sideways movement when the animal walks
Behaviour	Curious, alert and contented; animals should not stand apart from the herd, seem disinterested or show signs of a bad temper
Body score	It is an important indicator of the health of the animal. An animal in good health will have a body score between 2-3 (based on stage of lactation and pregnancy status)

Tips: Estimating the weight of the animal

The body weight of an animal can be estimated by the following formula:

$$\text{Body weight (Kgs)} = \frac{[\text{Hearth Girth(C) (inches)}]^2 * \text{Body Length (AB) (inches)}}{660}$$



2. Physiological pointers

Physiological pointers reflect the normal physiological processes occurring in the animals. Normal values indicate a healthy animal. Any deviation from normal physiology should be attended to by a veterinarian.

The temperature, respiration and rumination should always be within the normal range.

Brief descriptions of the physiological pointers are as under:

	What to know	What is abnormal	Probable reasons
Temperature	• Normal body temperature is between 38 to 39 °C (101.5 ± 1). • Temperature is taken ideally during early morning or late evening/night	• Higher temperature (Fever). • May be accompanied by rapid breathing, shivering and occasional diarrhoea • Ears, horns and legs are usually cold to touch while body is too warm	• Infection, • Heat stress, • Hyper excitability
		• Lower temperature (hypothermia)	• Hypocalcaemia (milk fever) • Shock following serious infections/poisoning • Exposure to extreme cold
Respiration	• Normal respiration is 10-30 times (breathing in + breathing out) per minute in adults and 30-50 times per minute in calves	• Increase in respiration rate	• Fever • Heat stress • Animal is in pain or is excited
	• Respiration is observed best from the animal's right flank, seen from behind	• Decrease in respiration rate	• Milk fever • Shock
		• Laboured breathing	• Blockage in nasal passage • Shock

Tips: Taking rectal temperature using a digital thermometer

1. Ensure reading is zero before use.
2. Insert the tip of the thermometer into the rectum at an angle so that it touches the rectal wall.
3. Retain for at least 1 minute.
4. Wipe the thermometer clean and note the reading.

Tips: Observing respiration

1. Ensure that the animal is calm.
2. Stand at a safe distance behind the animal.
3. Observe the movement of the animal's right flank region (arrow).

	What to know	What is abnormal	Probable reasons
Rumination	• Rumination occurs 7-10 hours per day in 5-25 cycles, each lasting 10-60 minutes • Chewing while ruminating occurs around 40-70 times within 45-60 seconds • Rumen motility occurs at a rate of 1-3 per minute	• Decrease in rumination	• Improperly balanced ration • More concentrate in ration • Rations with low fibre • Inadequate rations • Other diseases conditions
		• Decrease in rumen motility	• Milk fever • Acidosis • Infections
Feeding	• Animals feed around 5 hours every day • Feeding is spread out over 10-15 meals • Rumen fill score should correspond to the lactation stage.(See rumen fill scores)	• Low rumen fill score • Decrease in feeding time	• Inadequate rations or ailing animal
		• Depraved feeding (eating mud or anything that the animal comes across)	• Indicative of Pica (phosphorus deficiency)
Drinking	• Clean drinking water is to be made available 24x7 to the animals • Around 3-5 litres of water is required for every litre of milk produced • Requirement of water increases greatly during summer	• Reduced milk production • Constipation • Animal not drinking water	• Adequate quantity of clean water is not available 24x7 • The water provided is dirty and foul smelling due to soiling with mud, dung or algal growth • Insects /larvae in water
		• Water engorgement (Animal binges on water resulting in haemoglobinuria-coffee coloured urine)	• Animals are deprived of water for long periods

Tips: Measuring rumen motility

1. Place a clenched fist on the rumen fossa on the left flank of the animal.
2. Apply a little pressure on the fist and hold for about a minute.
3. The fist will be pushed back when rumen contraction occurs.

Do you know?

The rumen of an adult bovine can hold 100-150 litres of water!

Defaecation

What to know	What is abnormal	Probable reasons
• Defaecation occurs around 10-25 times per day • Quantity of dung is based on the body weight • An animal weighing 350-400 Kg excretes around 20-25 Kg of dung a day • Manure consistency score should be around 3 (see manure consistency scoring)	• Reduction in frequency / quantity of dung/ constipation / inspissated dung • Diarrhoea • Bloat	• Milk fever • Ketosis • Inadequate water intake • Poisoning • Gastro-intestinal tract Infections • Internal parasites • Lactic acidosis (foamy, yellowish brown dung) • Johne's disease(gas bubbles in large numbers in dung) • Sudden change in feed, especially legumes • Internal parasites
• Water-logged areas with snail populations have high chances of amphistomes & schistosomes requiring specific treatment	• Foetid diarrhoea with bottle jaw • Diarrhoea, weight loss, anaemia; blood may be seen after defaecation	• Amphistomes • Schistosomiasis (sub-clinical infections with low growth & productivity also common)
• Reduced dry matter intake immediately post calving due to ketosis/milk fever etc may lead to abomasal displacement	• Exceptionally greasy or pasty faeces, apparently covered with thin oil film	• Left-sided abomasal displacement
• Abrupt changes in feeding & management, inadequate water intake, parasitic infection,dental abnormalities, coarse feeds, highly fermentable feeds etc may predispose to intestinal obstruction	• Difficulty in defaecation, mucous with blood	• Intestinal obstruction
• Manure digestibility score of 1 is ideal for milking and dry animals (see manure digestibility scoring)	• Undigested particles in dung (1-2 cm)	• Indigestion • Gastro-intestinal infections
	• Matchstick size fragments in dung	• Tooth/ stomach diseases

	What to know	What is abnormal	Probable reasons
Urination	• Urination occurs around 10 times a day • Quantity of urine is based on body weight(around 1 ml per Kg body weight per hour) • An animal weighing 350-400 Kg excretes around 8.5-10 litres urine a day	• Decrease in quantity of urine	• Milk fever
		• Change in urine colour	• Babesiosis • Water engorgement • Urinary infection
		• Difficulty in urination	• Urinary calculi • Kidney problems
Milk Production	• Peak yield is reached 1-2 months after calving • Heifers peak at 75% in the first and at 90% in 2nd calving in comparison to mature cows	• Sudden reduction in milk production	• Change in milking routine/ personnel(buffaloes take longer time to get used to new routines) • Adverse climatic conditions • Change in feed/feeding pattern • Animal in heat • Milk fever • Ketosis
		• Change in colour of milk	• Mastitis • Phosphorus deficiency • Teat injury
		• Reduction in fat %	• Sub-clinical mastitis • Thin or fat animals • High energy diet • Reduced quantity or low quality roughage in diet
		• Reduction in SNF %	• Sub-clinical mastitis • Low energy diet • Heat stress • Underfeeding • Low quality roughage

Do you know?

Around 500 litres of blood need to circulate through the udder to make one litre of milk!

	What to know	What is abnormal	Probable reasons
Heat Signs	Average age at puberty: ▪ Cross bred - 18 months ▪ Indigenous breed - 2.5 years. ▪ Buffalo- 2.5-3 years • Heat is less pronounced in buffalo • First heat post calving is seen 40 days after calving	• Animal not coming into heat after the average age at puberty	• Undernourishment • Mineral deficiency • Worm infestation • Silent heat (especially in buffaloes) • Anatomical defects • Congenital defects
	• Repeated bellowing, swollen vulva, clear discharge from vagina, frequent urination, mounting and allowing to be mounted are major signs of heat	• Animals not conceiving after repeated inseminations	• Uterine infections • Hormonal defects • Anatomical • Congenital defects
		• Animals not coming into heat after calving	• Energy deficiency • Mineral deficiency
Salivation	• Around 40-150 litres of saliva is produced per day based on type of ration given • Roughages causes production of more saliva while concentrates reduce it	• Increased salivation, drooling, frothiness	• Feeding of coarse material • Lesions in the mouth, tongue etc. • Foot & Mouth Disease (FMD) • Poisoning • Rabies

Tips: Time of insemination

- If heat is seen in the evening, insemination is to be carried out on the following morning.
- If heat is seen in the morning, insemination is to be carried out in the evening of the same day.
- Heat may persist in some cases for more than a day (prolonged heat) wherein insemination may have to be repeated.
- Some animals may even have a shorter heat period for which insemination may need to be carried out earlier.

Tips: When to consult a veterinarian for infertility in your animal

In case the animal has not conceived even after three inseminations, have it examined by a veterinarian for further course of action. Repeated inseminations may damage the uterus!

Do you know? Sub-clinical acidosis

Lesser saliva production may lead to sub-clinical acidosis leading to reduced feed intake, weight loss, unexplained diarrhoea and exhaustion. This may also lead to laminitis and lameness.

Do you know? Test to asses heat

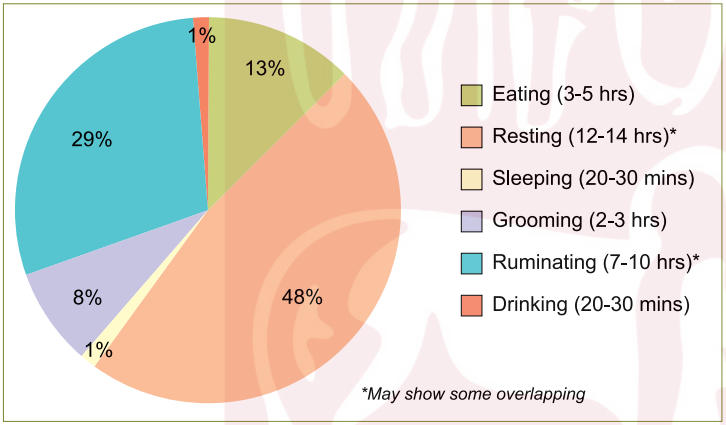
An animal in heat will sink its back and raise its tail to one side when the lumbo-sacral region is massaged.

3. Activity cycle

An idea on the activity cycle of bovines will help one assess the level of comfort the animal is in. An animal that is comfortable will exhibit its normal activity pattern if allowed to do so. Any drastic alterations in the activity patterns should be viewed seriously and mitigated.

Animals should be allowed to exhibit its normal activity cycle.

The normal activity pattern of bovines in a day can be depicted as under:



Do you know?

Blood circulation to the udder is increased by around 30% when the animal is lying down, thereby helping to increase milk production and udder immunity.

What is abnormal	Probable reasons
• Hyper excitability	• Change in routine /personnel • Hypomagnesaemia • Nervous form of ketosis • Nuisance from biting flies, heat etc. • Central Nervous system diseases. (eg. rabies)
• Drastic alterations in activity patterns	• Milk fever • Severe infections • Shock • Improper feeding management • Lack of adequate space • Improper management practices (animals always remaining tethered)

4. Calving pointers

Understanding calving pointers helps the farmer to identify when the animal requires veterinary attention. The calving pointers can be divided into 3 stages: (i) Pre-calving pointers (24 hours before calving) (ii) Calving and (iii) Expulsion of placenta.

(i) Stage I: Pre-calving pointers (from 24 hours prior to calving):

Clear mucous discharge from vulva and udder filled with milk are imminent signs of onset of calving.

Other signs include:

- Animal may seek isolation
- Loss of appetite
- Restlessness, kicking at belly/scratching flank region
- Pelvic ligaments relax causing tail head to rise.
- Vulva becomes enlarged and flabby.
- Udders fill with milk can occur 3 weeks before or a few days after calving.
- Shape of belly changes as calf moves to position of delivery.

Raised tail head, mucous discharge from vulva, udders filled with milk are signs of onset of calving.

Enlarged and flabby vulva at the onset of calving.

Tip: Anticipating the calving date

- Always write down the date of insemination.
- Do pregnancy diagnosis after 3 months of insemination if the animal is not showing any heat symptoms.

Do you know?

The average gestation period of cattle ranges from 280-290 days and buffalo, 305-318 days.

(ii) Stage II: Calving pointers (30 minutes to 4 hours):

Both the forelimbs and head of the calf are seen in normal delivery.

- The calving process starts with the appearance of water bag.
- Animals with normal calf presentation usually deliver within 30 minutes to one hour after the water bag bursts.
- Heifers may take up to four hours.
- Animal may calve either standing up or lying down.

Delivery process begins with appearance of water bag

Both the forelimbs and head are seen in normal calving

Attention!

Animal labouring for over an hour with no signs of water bag appearing requires immediate veterinary care.

(iii) Stage III: Expulsion of placenta (3-8 hours)

- Normally expelled within 3-8 hours
- If placenta is retained more than 12 hours, it is termed as Retention of Placenta (ROP).

Placenta retained more than 12 hours is termed as ROP.

Attention!

Never try to forcibly remove the retained placenta since it may cause severe bleeding and lead to serious complications which may be fatal.

5. Healthy new born calf pointers

It is critical for a farmer to be aware of the signs of health in a new born calf in order to carry out necessary interventions at the earliest.

Healthy new born calves stand up within minutes of calving and start suckling within a short period (1-2 hours or less).



- Healthy calves stand up within minutes of calving (left).
- Calves with raised and wagging tail (middle) while nursing indicate proper closure of oesophageal groove.
- A calf that had a difficult calving will have swollen head or, meconium staining of perineum/body and reduced vigour and motivation to nurse (right). They require special attention. Other abnormal calf signals and its probable causes are:

Pointers to ill health	Probable cause(s)
Does not stretch its legs when aroused after a lengthy rest	Often the first sign of ill health
Kicking belly with hind legs	Pain in abdominal area
Grinding teeth	Pneumonia/scours/bloat etc. that has taken a serious course

Pointers to ill health	Probable cause(s)
Unable to stand	• Injured knee • Displaced joint • Infected navel • Weakness • Vit E/ selenium deficiency etc.
Sunken eyes and loss of skin flexibility	Dehydration usually following diarrhoea
Pot belly and rough coat	• High fibre and low energy diet • Internal parasites
Bloating after drinking milk	• Improper closure of oesophageal groove due to rough handling • Feeding milk that is too hot/too cold • Force feeding or overfeeding etc.
Dry muzzle, droopy ears	Fever
Standing with legs spread and extended head	Lengthy bout of pneumonia
Diarrhoea	• Gastro-intestinal tract infections • Improper closure of oesophageal groove

Do you know? The 3 pillars of healthy life for a new born calf

1. Navel dipping with appropriate disinfectant soon after birth.
2. Timely feeding of colostrum in adequate quantities.
3. Following a proper deworming schedule.

Do you know? The oesophageal groove

Also called reticular groove, is a muscular structure at the lower end of the esophagus that, when closed, forms a tube allowing milk to go directly into the abomasum (true stomach) without entering the rumen. This is very essential in calves to prevent milk from being fermented in the rumen.

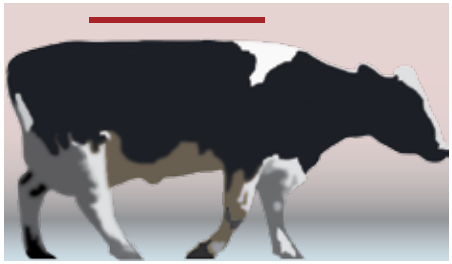
6. Feet and locomotion pointers

These pointers give a good indication of the floor condition, space availability and feeding practices.

The animal should have a locomotion score of 1 and a leg score of 1.

What to know	What is abnormal	Probable reasons
• The normal gait of an animal (locomotion score 1): Stands and walks with a level back, bears weight on all legs evenly, joints flex freely, head carriage remains steady as animal moves • Normal stance of hind legs (Leg score 1): The hind legs are parallel to the spine with no degree of outward rotation when viewed from behind	• Any form of lameness (see locomotion and leg score)	• Lack of sufficient space to lie down and to move about • Sub-clinical acidosis resulting from increased concentrate feeding in relation to roughage
	• Lack of confidence while walking on shed floor	• Very slippery flooring
	• Knee, hock or leg lesions	• Uneven or rough flooring
	• Overgrown hooves	• Improper hoof management

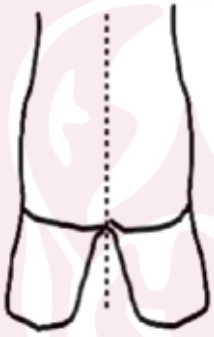
Animal with no lameness stands and walks with a level back



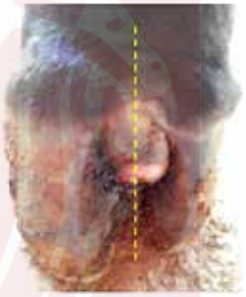
The normal hind leg is placed almost parallel to the spine as against the affected hind leg which is rotated outward (arrow).

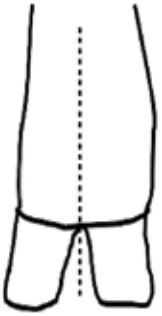
Hock and knee lesions are due to improper flooring

The dewclaws of the swollen feet are wider apart than the ones on the affected foot



In milder infections the swelling is symmetrical





In deep seated infections the swelling is asymmetrical

7. Feeding pointers

The feeding pointers reflect the feeding management, an understanding of which would help optimize returns since about 70% of the expenses incurred in dairying is for feeding.

The body condition, manure consistency and manure digestibility scores should be appropriate for the stage of lactation.

What to know	What is abnormal	Probable reasons
• The animal should have an appropriate rumen fill score based on the stage of lactation (see rumen fill score)	• A rumen fill score not corresponding to the stage of lactation	• Metabolic or other ailments. • Inadequate feeding
• Body Condition Score (BCS) of animal at the time of calving should be around 3 (not less and not more) (see BCS score) • BCS difference between parturition and 1st service should be limited to 0.5 for best results	• Low BCS	• Poor health/chronic diseases • Inadequate feeding
	• High BCS	• Overfeeding
• Manure consistency score should be around 3 (see manure consistency score)	• High manure consistency score	• Excess fibre • Hypocalcaemia • Ketosis
	• Low manure consistency score	• Acidosis • High concentrates in ration • Chronic gastro-intestinal diseases like JD etc.
• Digestion score of 2-3 based on stage of lactation (see manure digestibility scores)	• Low manure digestibility score	• Imbalance in ration formulation

Rumen fill score of 2 is seen in the first week after calving. If seen later on, it is a sign of insufficient feed intake (right)

BCS is an indicator of feeding management and health status of a herd

Do you know? BCS should not be above 3

High BCS (above 3) gives a fair indication on chances of occurrence of metabolic problems like ketosis, fatty liver syndrome and placental retention and also breeding problems later on.

8. Hygiene and teat health pointers

Quantifying the hygiene and teat health would provide information on the levels of cleanliness in the cattle shed and the milking practices followed.

What to know	What is abnormal	Probable reasons
• Hygiene score should be 1: There should be no dirt present or only minor fresh or dried splashing present on lower hind leg, tail and udder (see hygiene score)	• Dried dirt found on tail, lower hind leg and udder	• Lack of adequate space • Improper shed cleaning • Improper manure consistency
• Teat score should be 1: Teat end should be smooth with no calluses (see teat score)	• High teat scores	• Improper milking practices. • Improper use of milking machines
	• Cracks on teat skin	• Dryness

A hygiene score of 1

Teat score1: Smooth teat end

9. Heat stress pointers

The levels of stress due to heat can be quantified by using the panting score.

Animals should not have a panting score above 2.

Panting score	Breaths/ minute	Status
0	Below 40	Normal
1	40-70	Light panting. No salivation/ chest movement seen
2	70-120	Fast panting with salivation but with mouth closed
2.5	70-120	As for 2 with mouth open but tongue not extended
3	120-160	Open mouth with some drooling. Neck extended and head up
3.5	120-160	As for 3, but tongue out slightly, occasionally extended for short periods and excessive drooling
4	>160	Open mouth with tongue fully extended for prolonged periods and excessive drooling

An animal with panting score of 3 with open mouth and some drooling of salvia

10. Housing signals

There are a few important signals on housing that directly correlates with the comfort of the animal.

Description	What to know	Significance
Location of the shed	• Should be on elevated land to allow proper drainage	• Water – logging and dampness avoided in and around the shed • Reduction in vector population due to dryness
Shed orientation	• East- west orientation most beneficial in regions with average temperature is 30°C or more for up to 5 hours per day	• The feed and water troughs will always be under shade which will allow animals to eat and drink in the shade
Shed walls	• Walls should allow natural air flow. • In warmer regions no walls are required for the shed • A wall on one side (usually western) to block strong winds is required in certain regions	• Walls at improper places block out the natural wind flow increasing heat stress during summers

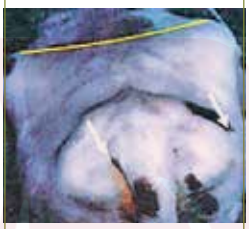
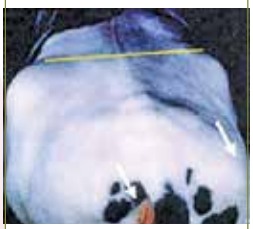
Description	What to know	Significance
	• North-south orientation of the shed is suitable in cooler regions	• Sun will strike every part of the floor area under and on either side of the roof at some time during the day which will help to keep the floored area dry • If the animals are kept at pasture throughout the day this system would be beneficial
Ventilation	• There should not be any smell of ammonia in the shed • A person should not feel suffocated standing in the centre of the shed	• Adequate ventilation reduces heat stress • Adequate ventilation reduces occurrence of respiratory diseases
Illumination	• There should be enough light in the shed during the day for a person to comfortably read in the centre of the shed	• Adequate levels of light are required for at least 8 hours a day for an animal
Flooring	• A person should be able to walk comfortably on the cattle shed floor with his /her bare feet	• Improves comfort levels of the animal • Reduces hoof problems
	• The floor should not have any slip marks caused by the hoof	• Slipping may cause irreparable damage to the hip leading to downers • Animals may be reluctant to move due to lack of confidence resulting in hoof problems
Effluent management	• There should be not stagnation of farm effluents in or near the cattle shed	• Stagnation increases vector menace which cause significant alterations in the animal's activity cycle leading to reduced productivity
Space requirement	• Around 160 square feet should be available per adult in loose housing including 40 square feet of covered area • Around 2 feet of manger space should be provided per animal • About 3 cubic feet water trough should be provided under shade for each adult	• Enabling animals to express its natural behaviour and move freely would bring about an increase in productivity and better foot health
Mangers and railings	• Callus/lesion on the neck region (top or/and bottom) indicates that the manger and/or railings are not at appropriate height	• Feed intake of animals with more severe lesions may reduce due to the pain while feeding thereby reducing productivity

11. Vocalizations during stress or pain

Adult bovines generally vocalize only during feeding, milking, during oestrus and after their calf has been taken away or has died. It is important to differentiate normal vocalizations from those due to pain in order to take adequate mitigation measures. Some vocalizations during pain are given below:

Vocalization	Accompanying circumstance	Significance
• Loud lowing(mooing)	• Mouth opened, head extended forward or raised	• Calling for calf, for milking (full udder), due to hunger or thirst. Also while in oestrus or calling other members of the herd
• Brief, loud bellow	• Directly after caused event (slamming door, injury) mouth open, head usually raised	• Fright or pain
• Repeated loud bellowing	• In healthy sexually mature females free from nervous symptoms	• Indicator of nymphomania
	• In cattle of any age showing signs of central nervous disorder, break in voice and worsening posterior paresis	• Symptom of Rabies
• Short grunt	• Either spontaneous (upon standing up or walking downhill) or as a reaction to pressure	• Sign of painful condition in the abdominal cavity • If localized to anterior chest region (xiphoid)-evidence of reticulo-pericarditis
• Prolonged groaning accompanying expiration	• Spontaneous or after slight exertion; head and neck extended; expiratory dyspnoea	• Painful space-occupying lesion in the chest (thoracic cavity)
• Snoring, roaring or grunting in time with breathing	• Pronounced difficulty in breathing	• Evidence of narrowing of the upper respiratory tract • Diseases affecting upper nasal tract like nasal schistosomiasis & rhinosporidiosis
• Coughing	• Dry and powerful cough occurring outside feeding times	• Indicator of disease of upper respiratory tract
	• Moist and/or weak cough	• Indicator of pneumonia or pleuritis • Lung worm infection

A. Body Condition Score (BCS)

Score - 1	Score - 2	Score - 3	Score - 4	Score - 5
				
Tail head - Deep cavity with no fat tissue under skin. Spine prominent	*Tail head - cavity shallow but prominent pin bones. Spine ends are rounded*	*Tail head - cavity shallow but prominent pin bones. Spine ends are rounded*	*Tail head - fat cover present. Some fat deposits around bone extremities*	*Tail head - Completely filled and folds evident. Bone extremities are rounded*

An animal in the first few weeks of lactation may have a score of 2. At drying off, animals should have a score of 3. An animal with score of above 3.5 will have metabolic and breeding problems.

B. Rumen fill score

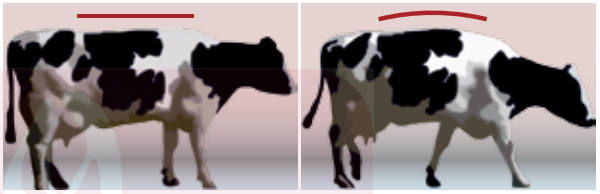
Score - 1	Score - 2	Score - 3	Score - 4	Score - 5
				
Vertical fold of skin seen down from the hip bone	*The rumen pit gives a triangular appearance*	*Rumen pit behind the rib bow can be seen*	*No rumen pit is seen*	*The belly skin is strongly stretched*

Animals in the 1st week of lactation may have a score of 2. Score 3 is the correct score for milking animals with good feed intake. Score 4 should be seen in animals at end of lactation and score 5 for dry cows.

C. Locomotion score

Score 1: Normal

Makes long confident strides. Walks with even weight bearing on all four feet, with a flat back.



Score 2: Mildly lame

Stands with flat back, but arches when it walks. Gait is slightly abnormal. Affected limb or limbs not immediately identifiable.

Score 3: Moderately Lame

Stands and walks with an arched back and short strides with one or more legs.

Score 4: Lame

Arched back while standing and walking but can still bear some weight on them.

Score 5: Severely lame

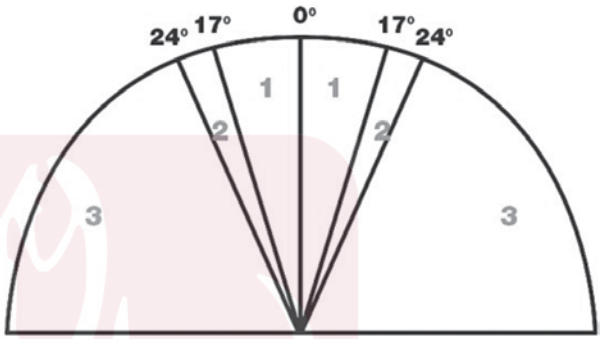
Pronounced arching of back. Reluctant to move, with almost complete weight transfer away from the affected limb.

Do you know? How do you identify the affected leg

Fore limbs: The head is thrown up when weight is put on the affected foot and the head comes down when it stands on the healthy foot.

Hind limbs: The head swings down when landing on the affected foot and the head goes up when it stands on the healthy foot.

D. Leg score



- Leg scoring is a quantification of the stance of the hind legs.
- It is related to the height differences between the inner and outer claws and the way the animal places its foot.
- Animals rotate their feet outwards to relieve painful areas in the sole and are more likely to do this on slippery floors when they walk with more weight on their heels.
- The score is based on the degrees rotation from perpendicular (90°) when both legs point parallel along the backbone from the back to the front of the cow.
- Score 1: 0° to 17° from 90°; this is the ideal situation although hoof problems can still occur.
- Score 2: 17° to 24° from 90°.
- Score 3: more than 24° from 90°.

E. Manure consistency score

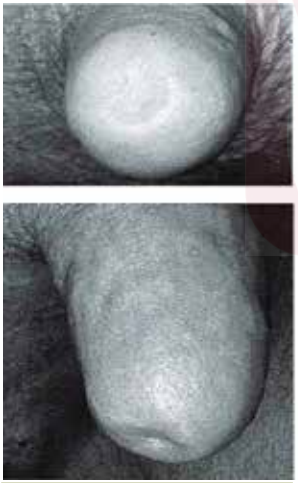
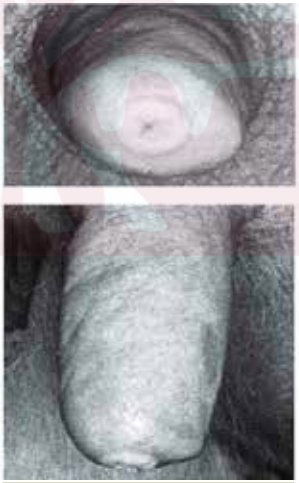
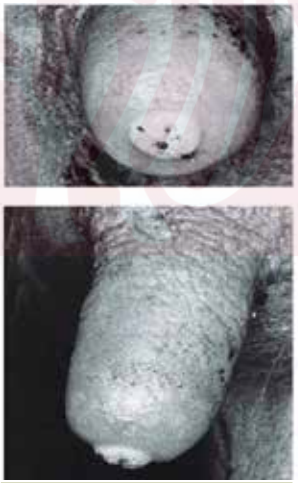
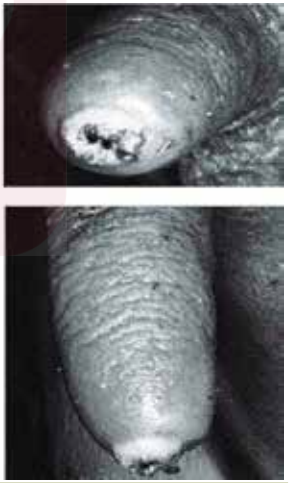
Score - 1	Score - 2	Score - 3	Score - 4	Score - 5
				
Loose and watery, most probably due to illness of gastro-intestinal tract	*Custard consistency, splatters far when dropped. Indicates ration imbalance*	*A pat 2-3 cm thick with a blob on top. Does not stick to footwear*	*The manure is thick, well- formed and stacks in rings. Sticks to footwear*	*Almost forming balls. Footwear leaves an impression*

A manure score of 3 is ideal for a lactating animal. A score of 4 or 5 may be acceptable for dry cows or heifers. It also indicates imbalance in ration.

F. Manure digestibility score

Score - 1	Score - 2	Score - 3	Score - 4	Score - 5
The manure feels like a creamy substance and is homogeneous and very weak. The manure contains no undigested feed particles	*The manure feels like a creamy emulsion and is homogeneous. The manure contains some undigested feed particles*	*The manure does not feel homogeneous. Undigested parts can be detected. After squeezing and opening the hand, undigested fiber parts stick to the fingers*	*Large feed particles can be felt in the manure. Undigested parts are clearly visible. After squeezing and reopening the hand, a ball of undigested fiber remains in the hand*	*Large feed particles can be felt in the manure. Undigested parts from the ration are clearly recognizable*
Ideal score for milking and dry animals	*Acceptable score for milking and dry animals*	*Acceptable score for in-calf heifers and dry animals*	*Requires ration adjustment*	*Requires ration adjustment*

G. Teat end score

Score - 1	Score - 2	Score - 3	Score - 4
			
Smooth bottom, no or smooth callus. No lesions	*Raised callus ring with slight roughness*	*Rough callus with keratin growth*	*Very rough callus with keratin growth and cracking*

H. Hygiene score

Flank (including tail)	*Lower hind leg*	*Udder*
		
		
		

Score-1: Clean

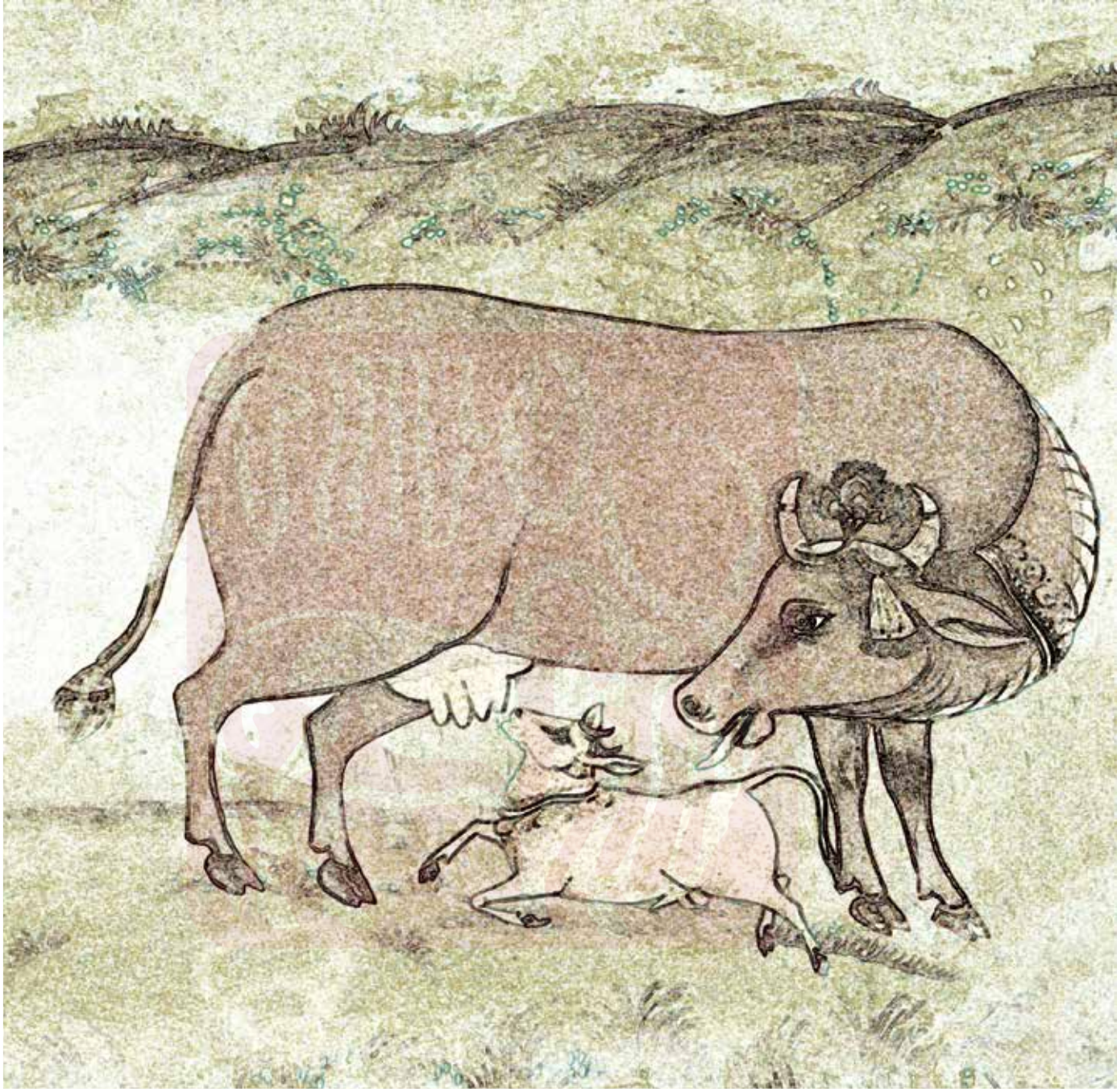
No dirt or only very little fresh or dried dung present

Score-2: Dirty

Dirty areas present (at least palm sized)

Score-3: Very dirty

Dirty areas present to at least forearm length.



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