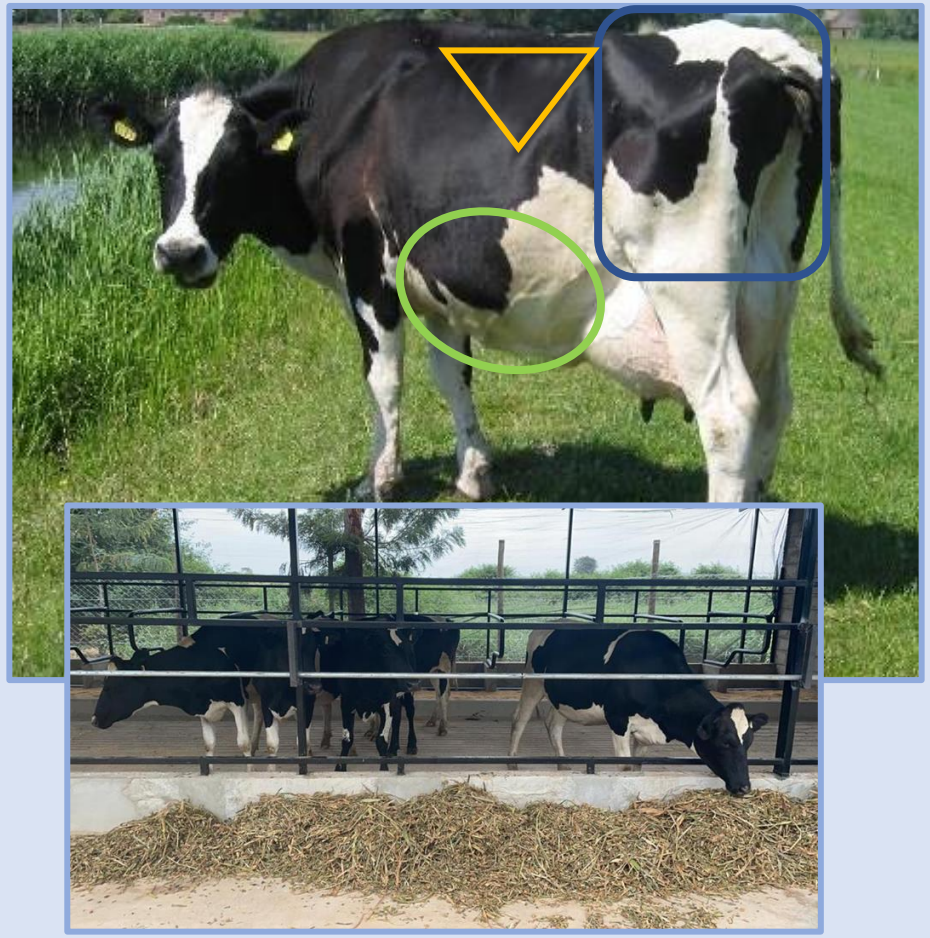
Theme 3: Animal Nutrition and Feeding

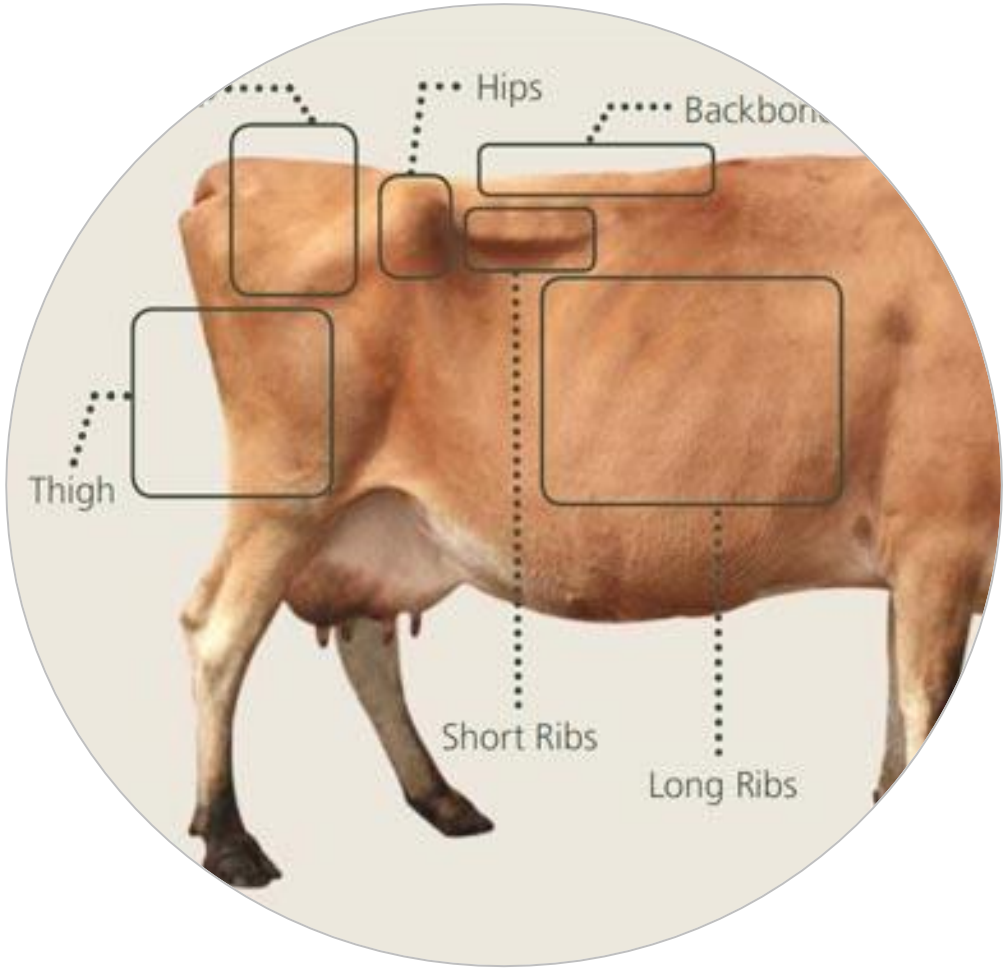
REVIEWING FEED INTAKE, RUMEN FILL, BODY CONDITION SCORING (BCS) - Level 2

Topic	Training & information Content
3.1	Estimating feeding value of fodder & feed on dairy farms
3.2	Sampling feeds & forages/analysis interpretation
3.3	Estimating Dry Matter intake for various breeds/age categories of dairy cattle in the tropics
3.4	Reviewing feed intake, rumen fill, Body Condition Scoring (BCS)
3.5	Life weight estimation of cows
3.6	Rumen fermentation
3.7	Mineral & vitamin requirement, guidelines
3.8	Manure scoring and evaluation
3.9	Guidelines for ration calculations for various breeds, heifers, lactation stage (Rumen8)
3.10	Use of Rumen8 software for ration calculation
3.11	Optimization of ration with Rumen8
3.12	Feeding management guidelines
3.13	Feeding management of dry cows/close up
3.14	Feeding systems
3.15	Metabolic disorders
3.16	Scoring locomotion and hoof condition
3.17	Mycotoxin in dairy cattle nutrition
3.18	Heat stress in dairy cattle nutrition
3.19	Monitoring feeding management, using KPIs (based on Rumen8)



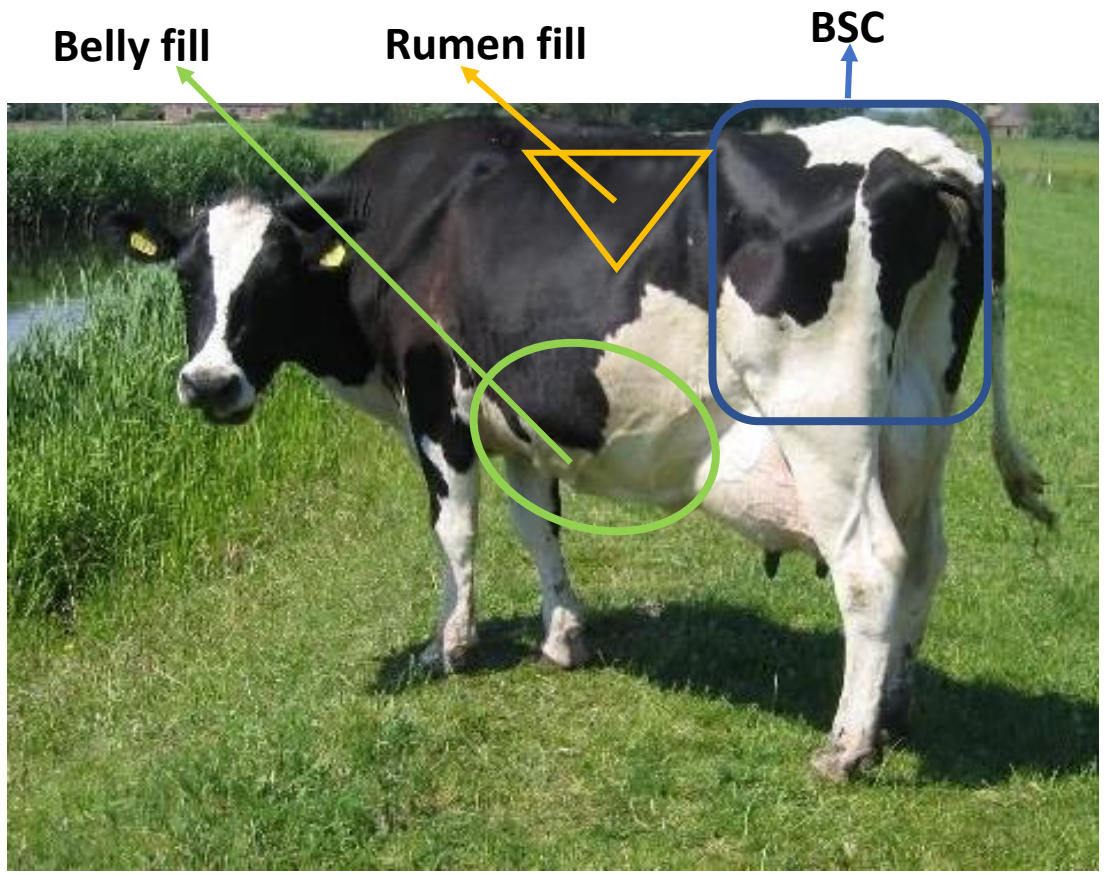
1. You will learn about (learning objectives):

- ❑ Rumen fill and factors affecting rumen fill.
- ❑ Body condition score (BCS) and how to assess cows for scoring.
- ❑ Feed intake in relation to rumen fill and body condition score.



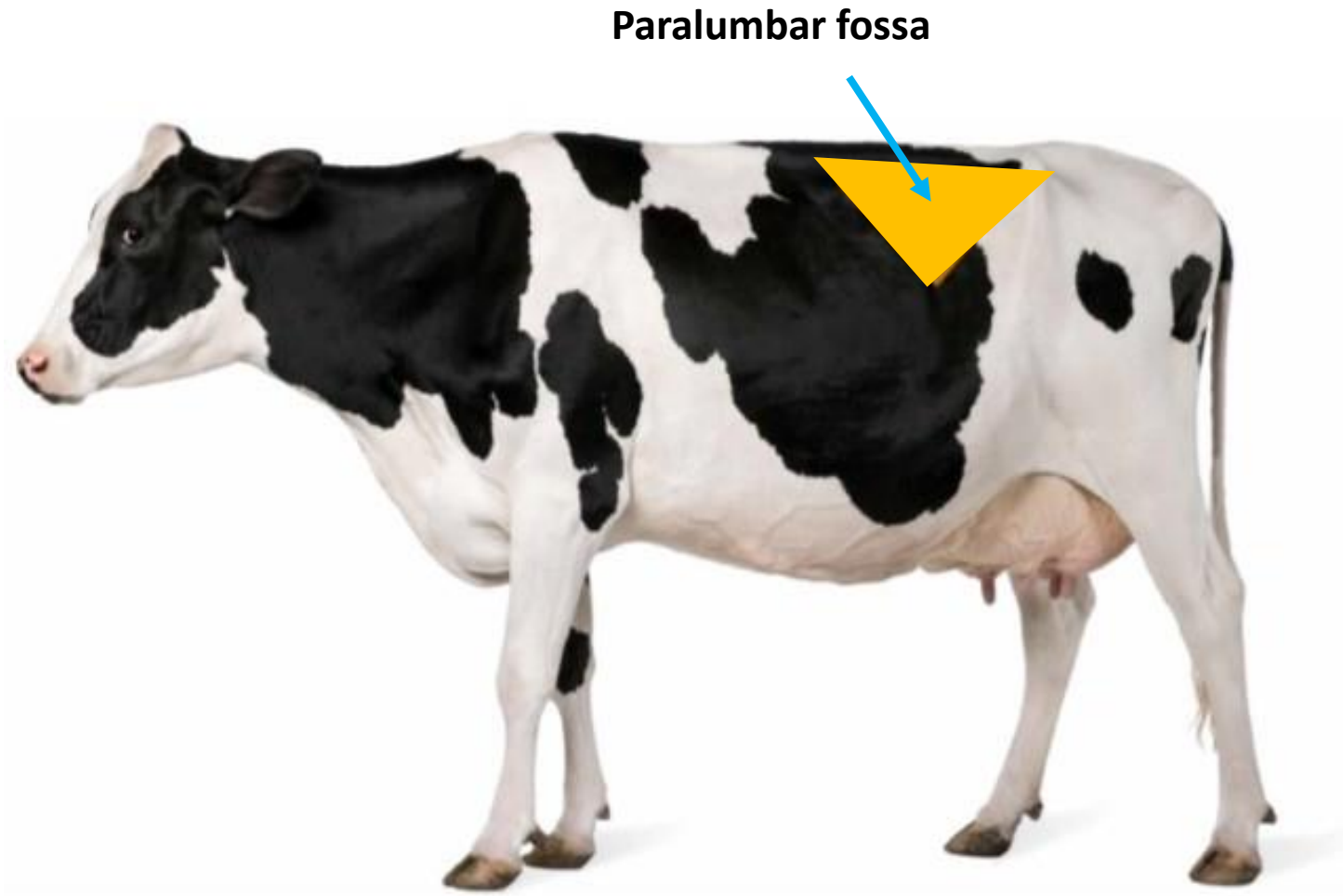
2. Background

- The amount of feed a cow consumes per day is know as feed intake and can be assessed in several ways;
  - Rumen fill is the total amount of liquid and dry matter in the rumen on a daily basis.
  - Belly fill score is the amount of feed intake in less than week and can drop dramatically in two days.
  - Body condition scoring (BCS) is a technique for assessing the condition of livestock at regular intervals and can be effected from one week on wards.



3. Rumen fill

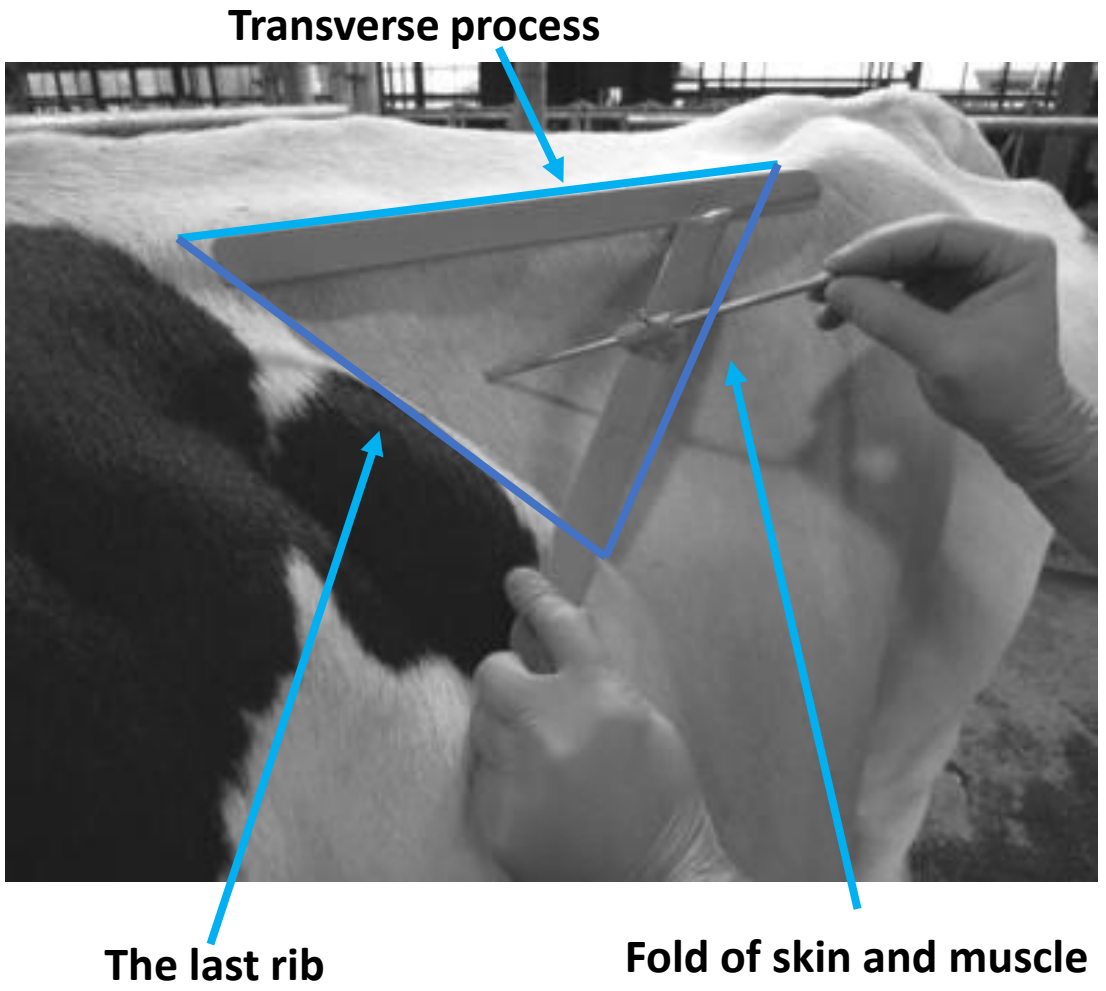
- The rumen takes up the majority of the left side of the abdomen of ruminants.
- Rumen fill scores can only be evaluated from the left hand side in the paralumbar fossa.



4. Position of Rumen fill scoring

- The boundaries are behind the last rib, beneath the transverse process of the spine (sometimes called the ‘short ribs’) and in front of a fold of skin and muscle which runs down from the hook bone.

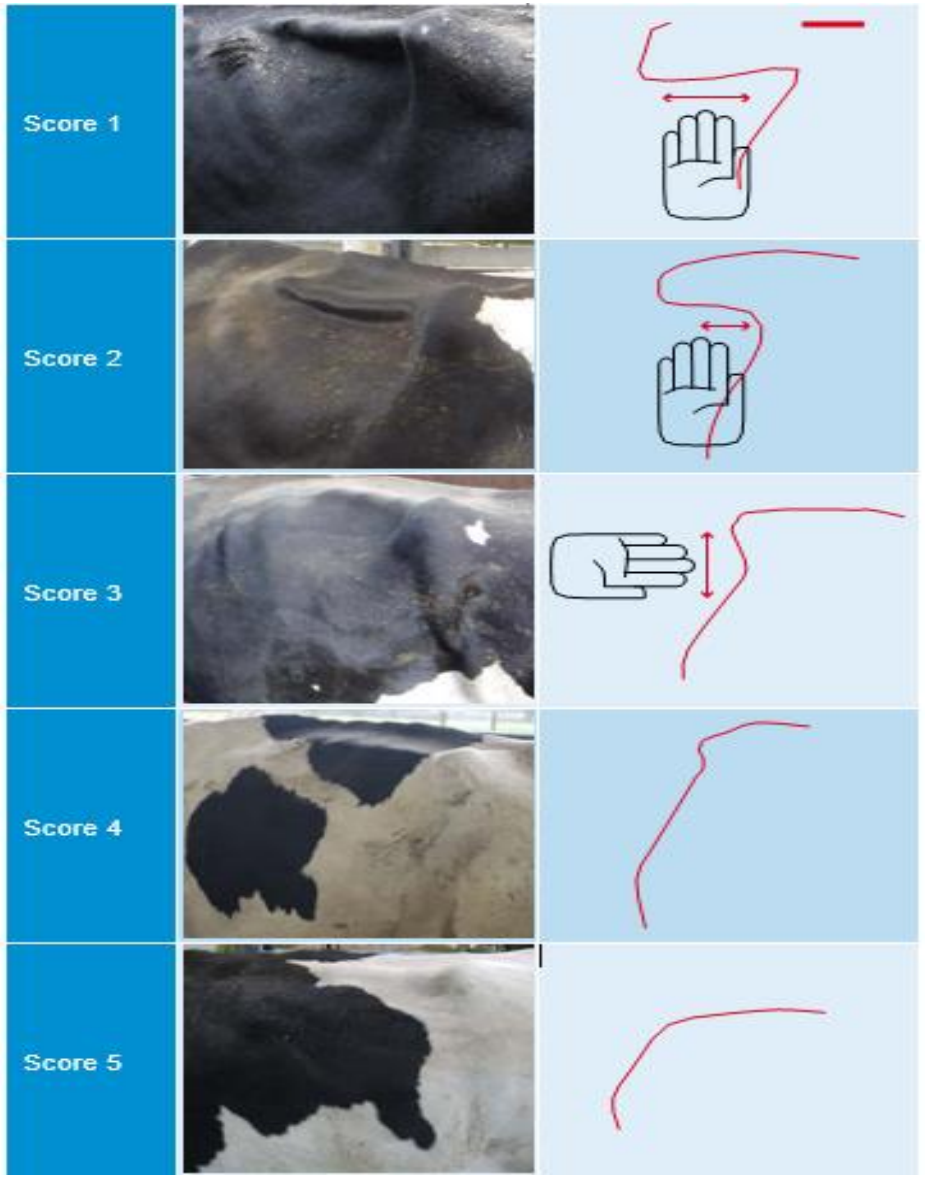
- When rumen fill is poor, this area is hollow/concave - often described as the “danger triangle”. This signals that the rumen is empty, and the cow has not been eating as much as she should on a daily basis.



5. Rumen fill score assessment

- The rumen score provides a good measure of the cow's nutritional status on a daily basis using a five point system assessing rumen fill.

  Rumen fill is scored on a five point scale:
  1 = very poor rumen fill to 5= full rumen.



6. Rumen fill assessment: Score 1

- Dip deep in the left flank, more than one hand width after last rib.
- Large depth when dipping is observed.
- Skin fold from hook bone falls vertically, so hollow shape looks rectangular.
- This shows the cow has eaten nothing in the last 24 hours.

Score 1

7. Rumen fill assessment: Score 2

- Dip in left flank after last rib with one hand deep.
- Skin fold from hook bone runs diagonally, so hollow shape looks like a triangle.
- Not unusual in first week after calving, but after that it signifies a problem - too little feed intake.

Score 2

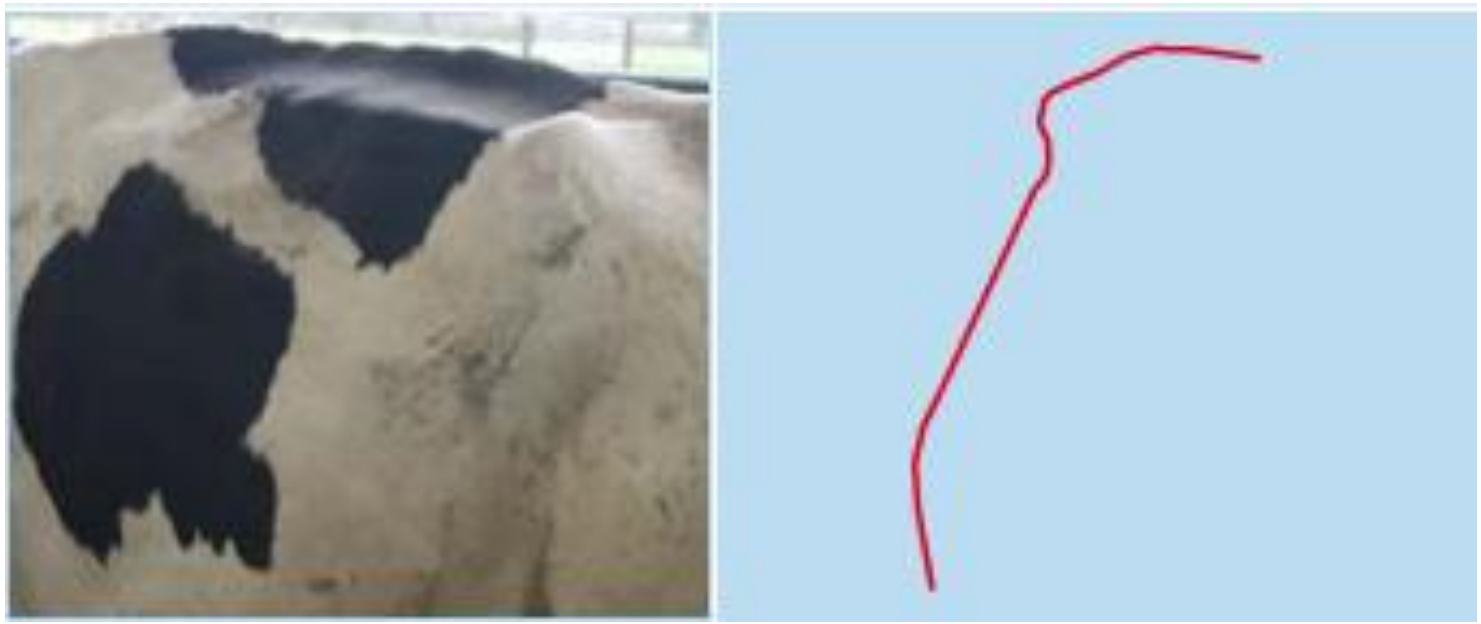
8. Rumen fill assessment: Score 3

- Slight dip visible in left flank, after last rib.
- Skin fold from hook bone is hardly visible.
- This is the desired score for milking cows having sufficient feed intakes.

Score 3

9. Rumen fill assessment: Score 4

- No dip is visible in left flank, after last rib.
- Skin fold from hook bone is not visible.
- This is the correct score for milking cows at the end of lactation and through the dry period.
- It is the target minimum score for pre-calvers.



Score 4

10. Rumen fill assessment: Score 5

- Skin is flat or slightly bulging on the left flank, after last rib.
- The skin over the whole belly is quite tight, and there is no visible transition between the flank and the ribs.
- This score is often seen in pregnant dry cows and cows on a ration with a very high fiber content.

Score 5

11. Rumen fill in relation with feed intake

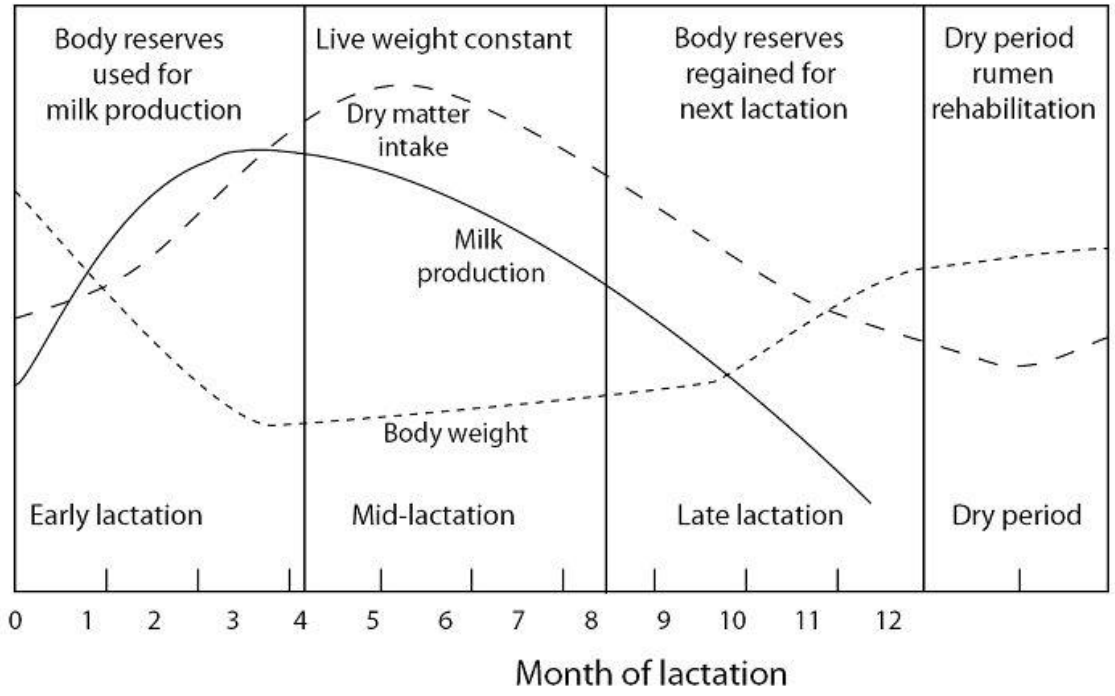
- Assessing rumen fill is a useful management tool to evaluate;
  - Dry matter intake (DMI), recent appetite and give an indication about the rate of feed passage through the digestive tract.
  - Ration fed: Rations that have a slower rate of passage have higher rumen fill scores, compared to rations that have a faster rate of passage.

12. Rumen fill in relation with Dry matter intake (DMI)

- The Rumen fill is defined as the total amount of liquid/moisture and dry matter in the rumen.
- Rumen fill constitutes of previous fed feeds, recent feeds, water and gases produced.
- Rumen being filled doesn't mean dry matter requirement has been met.

13. Rumen fill in different lactation stages

- A heavily pregnant uterus and high fiber ration should lead to a higher rumen fill score for dry cows.
- Pre-calvers targets a rumen fill score is at least 4 because the pregnant uterus occupies a large space.
- The milkers' group (early and mid lactation), for any cow which is rumen fill score 2 or below indicates she is not eating well and she may be sick, lame or injured.
- Rumen fill score of 2 is common in the first week of lactation, but later in lactation a score of 2 or less indicates either poor feed intake and/or a high rate of passage.



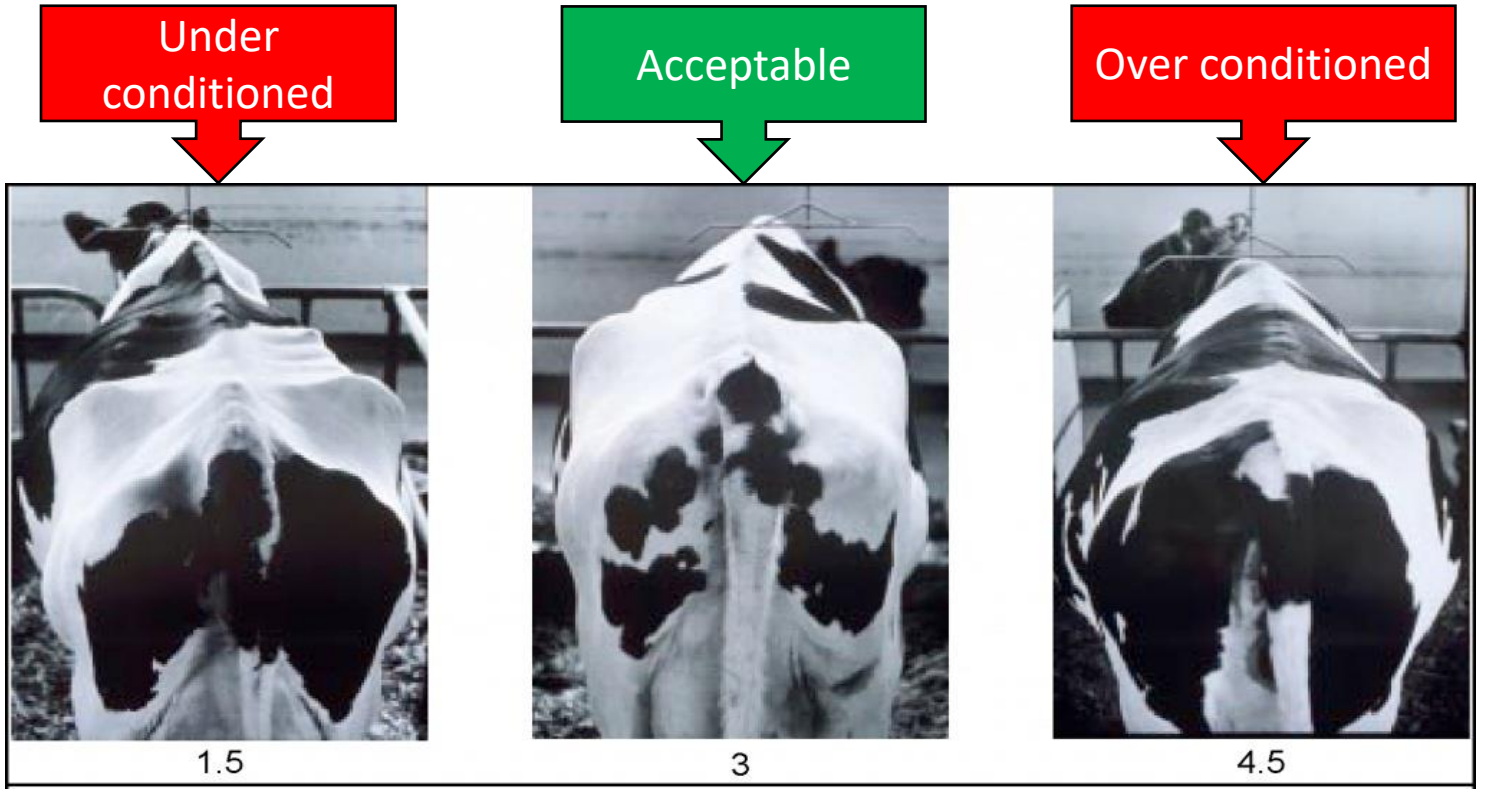
14. Factors affecting Rumen fill

- Where individual cows have low scores, it implies need for further investigation:

  - Are they ill?
  - Are they more vulnerable, lower ranking animals getting pushed out from feed trough if feeding space is too narrow.
  - If there is a lot of variation in rumen fill scores in the herd/group, find out why.
  - If the scores in a group are too low or too high, monitor feed intake and inspect the ration.

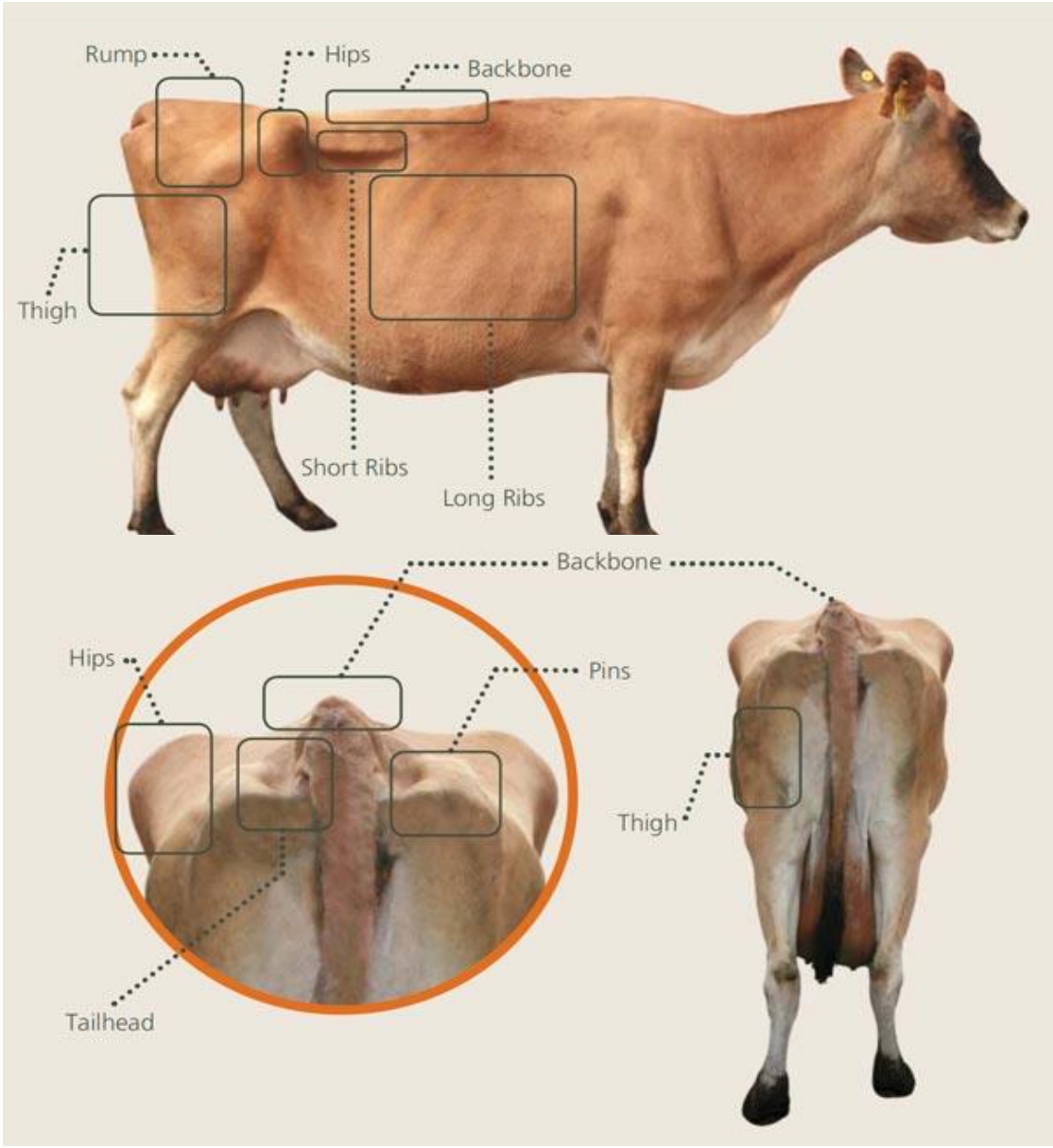
15. Body Condition Scores (BCS)

- BCS is the visual evaluation of the amount of muscle and fat covering the bones of an animal.
- It involves observing specific points on the animal.
- Scoring enables farmers to compare the condition of their cows with recommended targets.



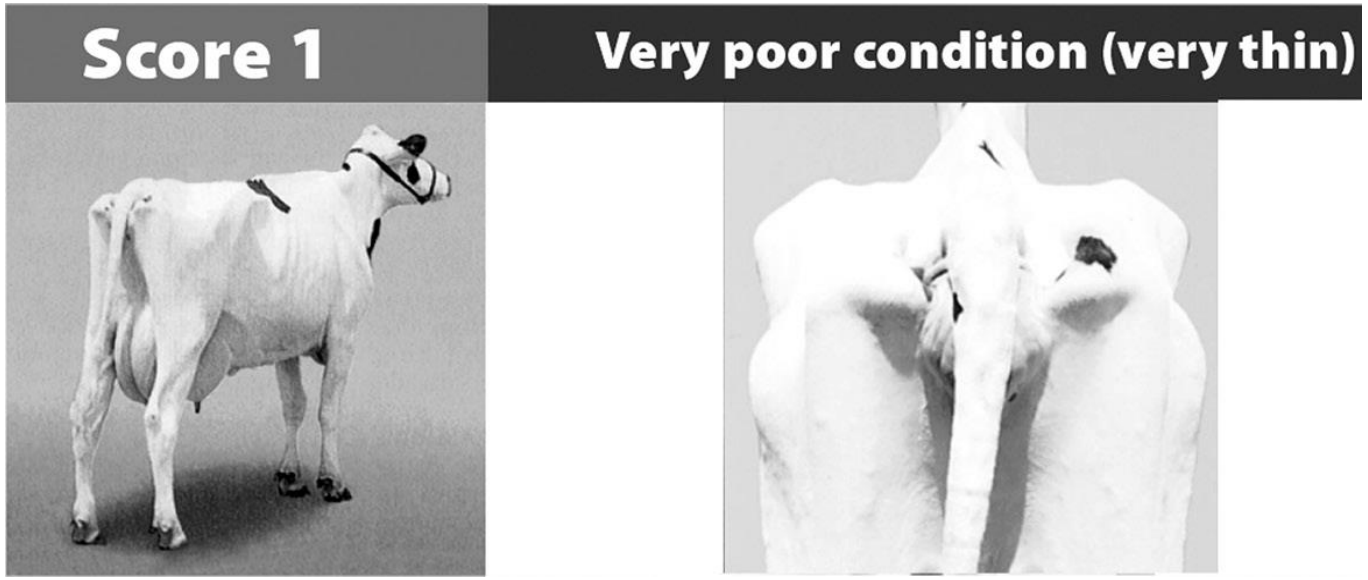
16. How to score Body condition

- For accurate scoring, both visual and tactile appraisals (touch the animal) are necessary.
- The cow is judged from the side and the back/rear, assessing the main parts as shown.



17. Body condition score 1

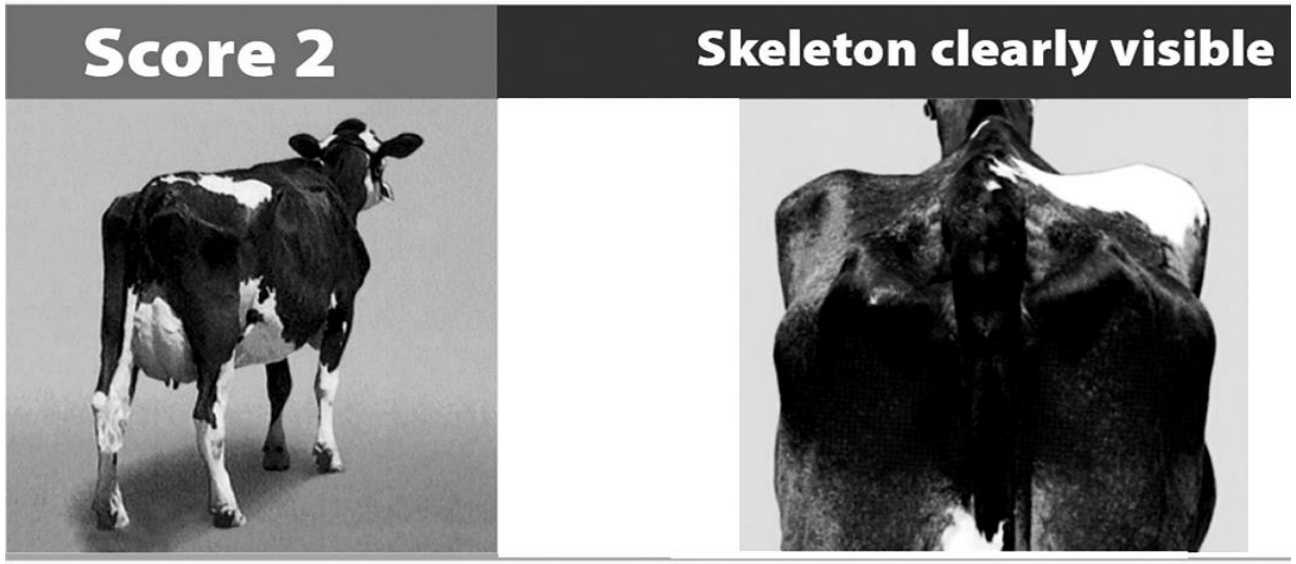
- Individual short ribs have a thin covering of flesh.
- Bones of the chine, loin, and rump regions are prominent.
- Hook and pin bones protrude sharply, with a very thin covering of flesh and deep depressions between bones.
- Severe depression below tail head and between pin bones.
- Bony structure protrudes sharply, and ligaments and vulva are prominent.



Score 1

18. Body condition score 2

- Individual short ribs can be felt but are not prominent.
- Ends of ribs are sharp to the touch but have a thicker covering of flesh.
- Individual bones in the chine, loin, and rump regions are not visually distinct but are easily distinguished by touch.
- Hook and pin bones are prominent, but the depression between them is less severe.
- Area below tail head and between pin bones is somewhat depressed, but the bony structure has some covering of flesh.



Score 2

19. Body condition score 3

- Short ribs can be felt by applying slight pressure.
- Altogether, short ribs appear smooth and the overhanging shelf effect is not so noticeable.
- The backbone appears as a rounded ridge; firm pressure is necessary to feel individual bones.
- Hook and pin bones are rounded and smooth.
- Area between pin bones and around tail head appears smooth, without signs of fat deposit.

Score 3

20. Body condition score 4

- Individual short ribs are distinguishable only by firm palpation.
- Short ribs appear flat or rounded, with no overhanging shelf effect.
- Ridge formed by backbone in chine region is rounded and smooth.
- Loin and rump regions appear flat.
- Hooks are rounded and the span between them is flat.
- Area of tail head and pin bones is rounded, with evidence of fat deposit.

Score 4

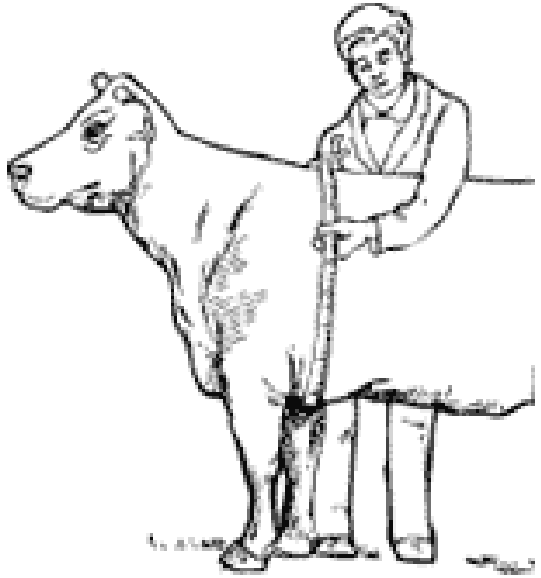
21. Body condition score 5

- Bony structures of backbone, short ribs, and hook and pin bones are not apparent; subcutaneous fat deposit very evident.
- Tail head appears to be buried in fatty tissue.
- The cow is considered as severely over-conditioned and this affect the general performance of the cow.

Score 5

22. BCS in relation to body weight

- A cow’s live weight alone is not a good indicator of body reserves.
- Cows of similar weight could be small and fat, or large and thin. Similarly, cows could have the same body reserves and yet have very different body weights.
- Live weight is also affected by gut fill and by pregnancy.
- Body condition scoring technique can be used to quickly and reliably estimating the body reserves of cows.

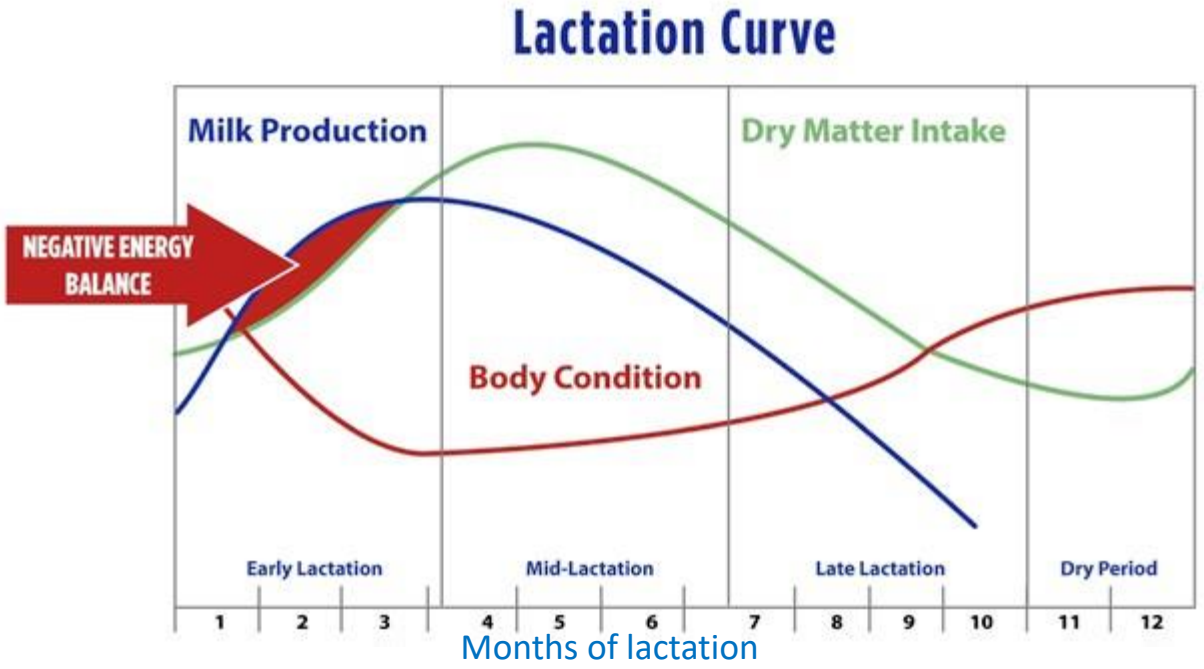


Weighing a cow using a weighing band

Weighing a cow on a weigh bridge

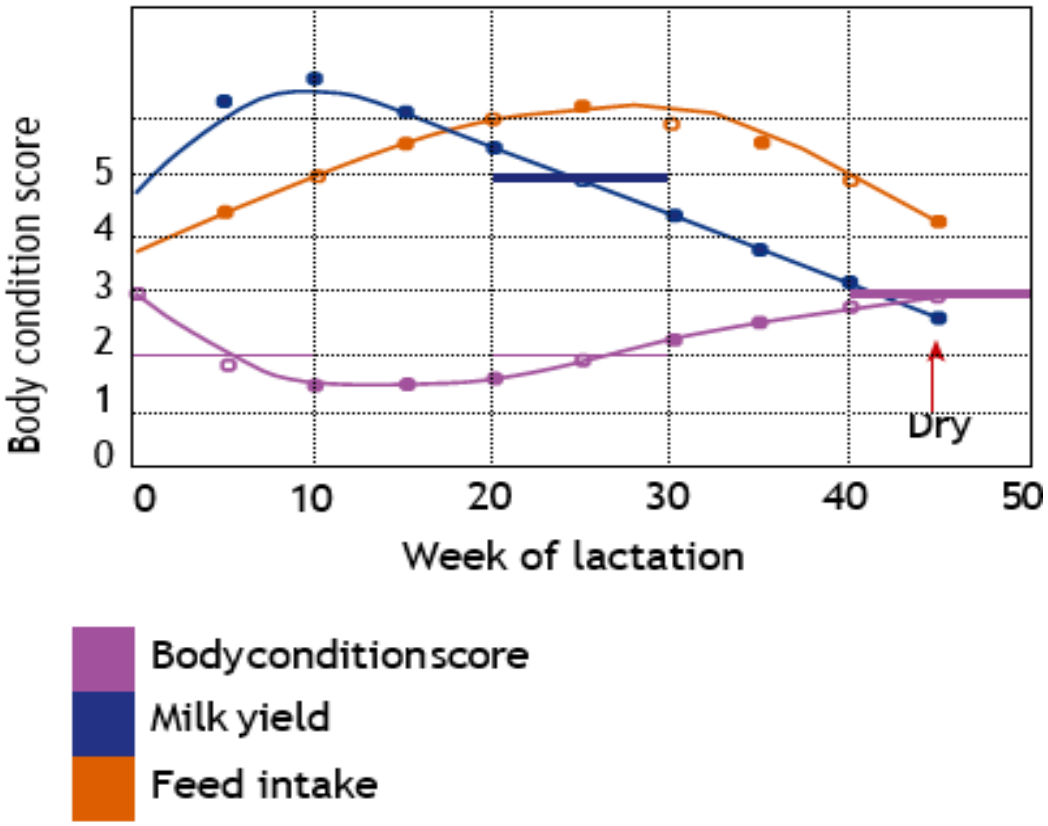
23. BCS in relation to feed intake

- Knowledge of BCS enables farmers to manage their feeding programs better.
- A major goal of proper feeding can be to maximize feed intake during early lactation (BSC is lowest).
- The sooner a cow reaches high levels of feed intake, the sooner she moves out of negative energy balance.
- Negative energy balance occurs when the daily energy requirement for a cow cannot be met by the energy in the diet she consumes in a day.



24. BCS in relation to lactation stages

- In early lactation, high potential dairy cows frequently produce far more milk than can be supported by feed intake alone.
- They do this by drawing on body reserves that were built up before calving.
- This phenomenon is where the condition score decreases due to the withdrawal of body reserves.
- This causes the cow to experience negative energy balance.



25. Feed management for better BCS

- Maximize feed intake (for example, total mixed ration feeding system is most efficient).
- Adjust energy density of the ration.
- Adjust crude and escape protein levels.
- Provide adequate fiber to prevent off-feed problems or chronic intake fluctuations.
- Check macro mineral (Ca, P, Mg and K) levels and water availability.

- END -