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COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

Body Condition Scores and Frame Scores for Beef Cattle

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Body Condition Scores (BCS)

- Describe relative fatness.
- 9-point scoring system.
- Useful management tool.
- Evaluate individual and herd nutritional status.
- Linked to reproductive efficiency.
- Pasture/Field application.
- Visual or combination of visual and palpation.



Relative Fatness & BCS

- Fat = Energy
 - Nutritional stress (i.e. poor forage quality, limited forage)
 - Increase nutritional demand (i.e. late gestation, lactation)
- BCS relates to % body fat
- Rule of thumb → ~75 lbs. between each BCS
 - adjust for cows in late gestation to account for fetus, fetal fluids and membranes.
 - Example:
 - An animal in BCS 4 weighing 1100# will need to gain 75# to move up to BCS 5. At an ADG of 2.0# it will take approx. 38 days to reach 1175#.

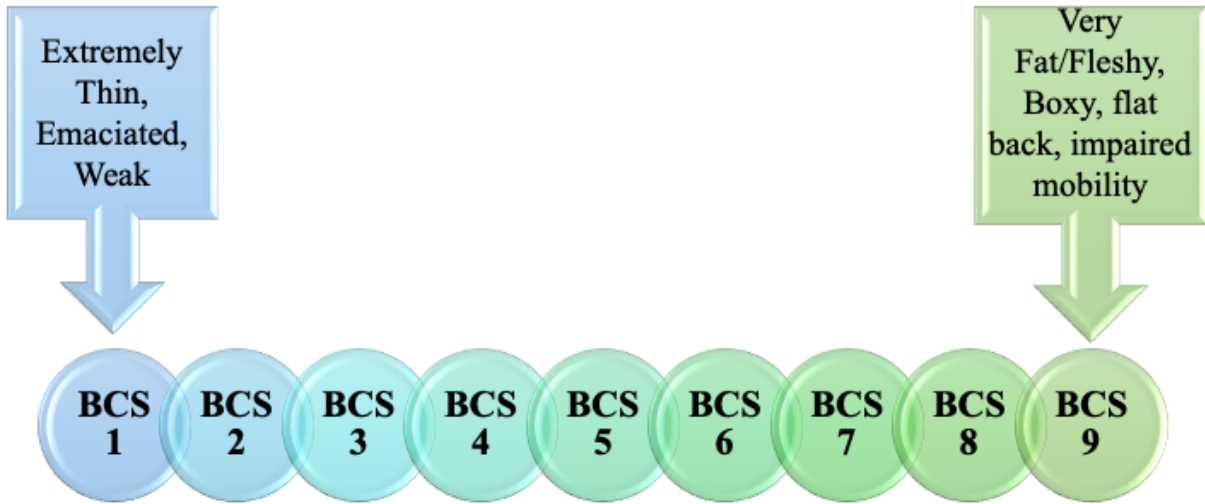
Table 1: Percent of Body Fat Associated with Each Body Condition Score.

BCS	% Body Fat
1	3.8
2	7.5
3	11.3
4	15.1
5	18.9
6	22.6
7	26.4
8	30.2
9	33.9

Ref: Nutrient Requirements of Beef Cattle, 7th Revised Edition, 2000. National Academy Press, Washington, DC.



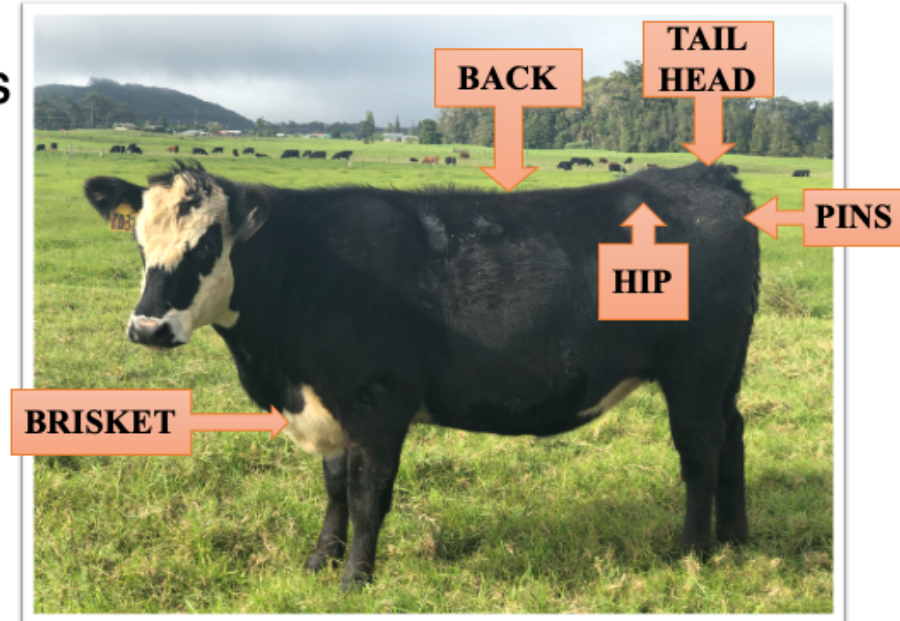
The 9-Point Scoring System



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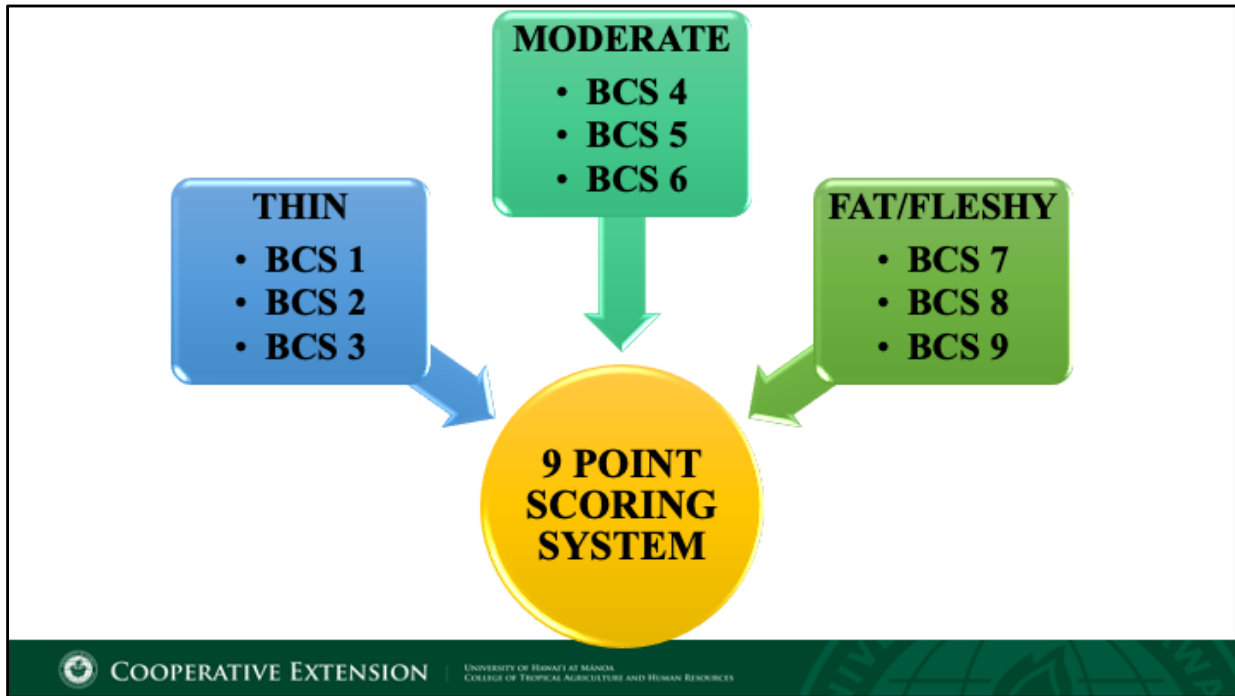
Key Areas



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The key areas that you will inspect on your visually appraisal are the ribs, back, hooks, pins, the tail head and the brisket. When you look at the key areas you are looking for the amount of fat cover over and if you are able to see any bone structures. Animals tend to lay down fat or finish from front to back and top down. If you can get the animal to move it helps to better visualize the fat cover in these areas. Make sure you address the animal from both right and left side. The rumen sits on the left side and may impact the look on the left side and depending on how full or empty the rumen it may be. Take into account for the amount of muscle and haircoat of the animals, particularly when it's in the colder part of the year when hair coat thickens. The other things that can impact your score could be dehydration if the animals been worked in a corral or trailing for a while, rumen fill, and pregnancy.



- Use groups to help when you first learning to apply BCS.
- With practice you will get more consistent and confident to assign individual scores.
- Your target BCS for most herds will be BCS 5-6.

BCS 1

- Bone structures of shoulder, back, hip, pins, rib are visible.
- No evidence of fat or muscle.



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- Weak, Thin and emaciated.
- All bone structures are visible and sharp to touch if palpated.
- Muscle loss.

BCS 2

- No fat evidence and possible muscle loss in hindquarters.
- Spinous process sharp to the touch. Spaces between may be visible.



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- May not appear weak.
- Bone structures visible and easily palpated.
- Muscle loss still evident.

BCS 3

- Little fat cover over back, loin and foreribs.
- Spinous process may be still visible and easily felt on palpation.



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- Fat cover may be visible over some areas.
- Bone structures can be palpated with light pressure.

BCS 4

- Fore ribs slightly noticeable, 12 & 13th ribs visible.
- Spinous process felt with light palpation, rounded not sharp. Minimal muscle loss in hindquarters.



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- Fat cover more apparent over back and foreribs.
- Light pressure needed to palpate spinous process.
- Little to no muscle loss visible.

BCS 5

- 12th & 13th ribs not visible, unless shrunk. Firm pressure needed to feel transverse process.
- Area around tailhead starting to fill.



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- Fat cover over ribs.
- Firm pressure needed to palpate ribs or spinous process.
- Fat starting to accumulate around tailhead.

BCS 6

- Ribs fully covered. Hindquarters are full/plump.
- Spongy fat noticeable around tailhead and foreribs on both side of body.



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- Ribs covered.
- Fat starting to fill brisket.
- Animal has more rounded appearance to hips and pins.
- Fat accumulation around tailhead more noticeable.

BCS 7

- Firm pressure needed to feel ends of spinous process. Space between are non-distinguishable.
- Abundant fat cover on both sides of tailhead.



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- Fat cover is abundant.
- Brisket full.
- Tailhead fat cover abundant.

BCS 8

- Smooth blocky appearance noticeable and bone structures not visible.
- Thick and spongy fat cover with patchy areas likely visible



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- Boxy/block appearance to animal shape.
- Fat covers all bone structures and very firm pressure needed if palpated.
- Fat patches may start to appear.

BCS 9

- Tailhead buried in fat. Abundant fat cover and patchy areas.
- Mobility may be affected.



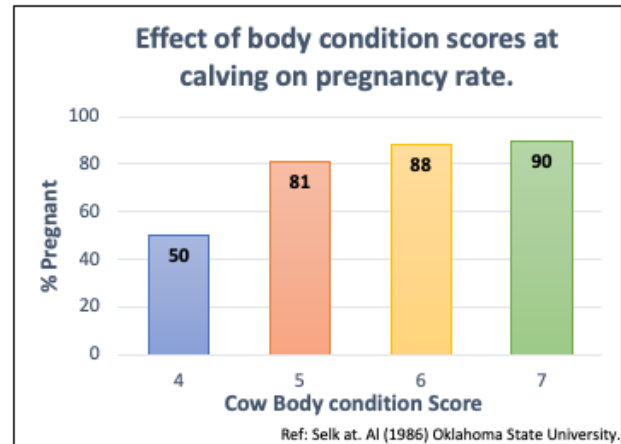
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- Tailhead buried in fat.
- Fat patches around body.
- Brisket full and round.
- Impaired mobility.

When to do BCS?

- Breeding Herd
 - Late Summer/ Fall
 - 90 days pre-calving
 - Calving
 - Weaning
 - 45 post-weaning
 - Breeding
- Grass-Finish/Market Herds
 - Multiple times during finishing period
- 30-60 days pre-shipping



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- BCS is best done as a daily practice when checking on herds. However there are key times that should not be missed. Evaluating BCS at these key periods will allow for sufficient time to address any nutritional deficiencies in your herd and make the adjustments needed to have your herd/animals in a desirable BCS for their production goals.
- BCS at calving will effect pregnancy rate and post-partum interval (time back to estrus). Cow in BCS 5,6 or 7 will have improved pregnancy rates and shorter post-partum intervals.

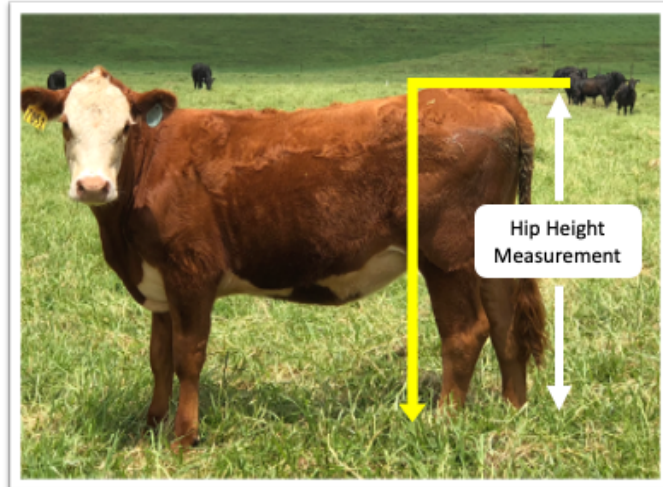
Frame Scores For Beef Cattle



Title Slide

Frame Scores

- BIF (Beef Improvement Federation)
- Estimate of skeletal size.
- Based on hip heights.
 - Age and Gender
- Stand square on flat surface
 - Alley or chute.
- Measuring stick with level.



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- Measurement of hip height at topline of animal (see image). Animals need to stand square and still so this is best done in a chute or some type of restraint. This value can be referenced on the BIF standard charts or calculate with formula specific gender (see next slide).
- Can be take from 5 months of age and older.

BIF Hip Height Charts

Hip Height (inches) and Frame Scores for 5-21 Month Old Heifers										Hip Height (inches) and Frame Scores for 5-21 Month Old Bulls									
Age (Months)	Frame Score									Age (Months)	Frame Score								
	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	9
5	33.1	35.1	37.2	39.3	41.3	43.4	45.5	47.5	49.6	5	33.5	35.5	38.5	39.5	41.6	43.6	45.6	47.7	49.7
6	34.1	36.2	38.2	40.3	42.3	44.4	46.5	48.5	50.6	6	34.8	36.8	38.8	40.8	42.9	44.9	46.9	48.9	51.0
7	35.1	37.1	39.2	41.2	43.3	45.3	47.4	49.4	51.5	7	36.0	38.0	40.0	42.1	44.1	46.1	48.1	50.1	52.2
8	36.0	38.0	40.1	42.1	44.1	46.2	48.2	50.2	52.3	8	37.2	39.2	41.2	43.2	45.2	47.2	49.3	51.3	53.3
9	36.8	38.9	40.9	42.9	44.9	47.0	49.0	51.0	53.0	9	38.2	40.2	42.3	44.3	46.3	48.3	50.3	52.3	54.3
10	37.6	39.6	41.6	43.7	45.7	47.7	49.7	51.7	53.8	10	39.2	41.2	43.3	45.3	47.3	49.3	51.3	53.3	55.3
11	38.3	40.3	42.3	44.3	46.4	48.4	50.4	52.4	54.4	11	40.2	42.2	44.2	46.2	48.2	50.2	52.2	54.2	56.2
12	39.0	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0	12	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0	57.0
13	39.6	41.6	43.6	45.5	47.5	49.5	51.5	53.5	55.5	13	41.8	43.8	45.8	47.8	49.8	51.8	53.8	55.8	57.7
14	40.1	42.1	44.1	46.1	48.0	50.0	52.0	54.0	56.0	14	42.5	44.5	46.5	48.5	50.4	52.4	54.4	56.4	58.4
15	40.6	42.6	44.5	46.5	48.5	50.5	52.4	54.4	56.4	15	43.1	45.1	47.1	49.1	51.1	53.0	55.0	57.0	59.0
16	41.0	43.0	44.9	46.9	48.9	50.8	52.8	54.8	56.7	16	43.6	45.6	47.6	49.6	51.6	53.6	55.6	57.5	59.5
17	41.4	43.3	45.3	47.2	49.2	51.1	53.1	55.1	57.0	17	44.1	46.1	48.1	50.1	52.0	54.0	56.0	58.0	60.0
18	41.7	43.6	45.6	47.5	49.5	51.4	53.4	55.3	57.3	18	44.5	46.5	48.5	50.5	52.4	54.4	56.4	58.4	60.3
19	41.9	43.9	45.8	47.7	49.7	51.6	53.6	55.5	57.4	19	44.9	46.8	48.8	50.8	52.7	54.7	56.7	58.7	60.6
20	42.1	44.1	46.0	47.9	49.8	51.8	53.7	55.6	57.6	20	45.1	47.1	49.1	51.0	53.0	55.0	56.9	58.9	60.9
21	42.3	44.2	46.1	48.0	50.0	51.9	53.8	55.7	57.7	21	45.3	47.3	49.2	51.2	53.2	55.1	57.1	59.1	61.0

Frame Score = $-11.7086 + (0.4723 \times \text{Ht.}) - (0.239 \times \text{Age}) + (0.0000146 \times \text{Age}^2) + (0.0000759 \times \text{Ht.} \times \text{Age})$, where Age = days of age.

Frame Score = $-11.548 + (0.4878 \times \text{Ht.}) - (0.0289 \times \text{Age}) + (0.00001947 \times \text{Age}^2) + (0.0000334 \times \text{Ht.} \times \text{Age})$, where Age = days of age.

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- Ref: https://beefimprovement.org/wp-content/uploads/2013/07/BIFGuidelinesFinal_updated0916.pdf

- Hip heights can be done on older mature animals. You can find those resources at the link above

Frame Size

- USDA-AMS
 - Standards for Grades of Feeder Cattle
- Related fat cover of 0.5in. at the 12th rib.
- There is no “one size fits all”.
- Match frame size with:
 - Feed resources
 - Breeding system
 - Market goal of herd



Frame Size	Frame Score	Predicted Future Slaughter Weights (lbs.)
Small	2-3	950-1100
Medium	4-5	1100-1250
Large	>5	1250-1400



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USDA-AMS uses frame size as part of their protocol for grades of feeder cattle. It groups the frame scores in to small, medium or large. Frame size is not a one size fit all type of measurement. It is a great predictor of future slaughter weights or weight at maturity. Use it to help manage your herds based on your feed resources, breeding system and/or market goal of the herd.

Summary

- BCS can and are best done on regular basis throughout the year for all herds.
- 75# between each BCS
- BCS is a 9-point scoring system.
- Frame scores are useful predictor of future slaughter weights, puberty and maturity.
- Frame size related to carcass fat at 12th rib after finishing.
- BCS and Frame scores are simple tools that can help manage and monitor herd production.



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Mahalo Nui!



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