Validation of a body condition scoring system in Nili Ravi dairy buffaloes (Bubalus bubalis): Inter- and intra-assessor variability

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Supplementary file

Material & Methods

Body condition scoring system

The BCS system used was the Elanco Animal Health body condition scoring chart for dairy cattle [Elanco Animal Health, 1996), based on Wildman et al. (1982) and Ferguson et al. (1994)]. This is a 5-point BCS system ranging from 1 to 5 with 0.25 increments and based on only visual assessment of body parts. The mid-range scores (2.5 to 4.0) of this system accurately assess body fat reserves and are critical for making management decisions. The buffalo body sketch is presented in figure S1 and the BCS points and the brief description of corresponding body parts have been presented in table S1.

BCS assessment methodology

The assessors recorded the BCS values of buffaloes in two phases. During phase I, the assessors were given the printed BCS chart developed for dairy cattle by Elanco Animal Health Ltd. One of the authors explained the details of the BCS chart to the assessors using powerpoint presentation. The assessors were then asked to assign the BCS to the buffaloes while having chart printouts with them as per the study plan. During phase II, the assessors were trained on live buffaloes. One of the authors gave a practical demonstration of assigning BCS on restrained buffaloes. Each body point used in the BCS chart was physically touched and shown to the assessors for clarity and differentiation. After the demonstration, the assessors assigned BCS to the buffaloes enrolled in the study according to the plan. .

Results

The frequency distribution of body condition scores assigned to different buffaloes during the study is presented in table S2. The most frequently assessed score was 3.75 followed by 3.5, 3.25, 4.0, 3.0 and 2.75. The assessed scores were within the functional mid-range of the BCS system.

References

Elanco Animal Health 1996 Body condition scoring. Bulletin AI 8478, Rev. 9/96. Elanco Animal Health, Indianapolis, IN. Avialable at https://www.vet.cornell.edu/sites/default/files/1e_Elanco%20Cow%20Body_condition_scoring_V3.pdf

Ferguson JD, Galligan DT & Thomsen N 1994 Principal descriptors of body condition score in Holstein cows. *Journal of Dairy Science* **77** 2695-703.

Wildman, EE, Jones, GM, Wagner, PE, Boman, RL, Troutt Jr, H & Lesch, TN 1982 A dairy cow body condition scoring system and its relationship to selected production characteristics. *Journal of Dairy Science* **65** 495-501.

Table S1. Description of different body points for scoring system.

Body condition score	Parts description
Functional range of BCS	3 to < 2.0
= 3	The line from pins to thurl to the hooks forms a flattened V and hooks are rounded
= 2.75	Hooks angular
= 2.5	Pins angular and palpable fat pad on points of pins
= 2.25	No fat pad on points of pins, corrugations visible 1/2 way between tip and spine of short ribs
= 2	Corrugations visible 3/4 way from tip to spine.
< 2	Thurl prominent and saw-toothed spine
Functional range of BCS	3.25 to 5.0
= 3.25	Thurl line forms a crescent or flattened U, tail head and sacral ligaments visible
= 3.5	Tail head ligament barely visible, sacral ligament visible
= 3.75	Tail head ligament not visible, sacral ligament barely visible
= 4	Tail head and sacral ligament not visible and thurl flat
= 4.25	Thurl flat, tip of short ribs barely visible
= 4.5	Pins buried
= 4.75	Hooks barely visible
= 5	All bony prominences including pin and hook bones are well rounded

Table S2. Percentage of buffaloes assigned to each BCS point across the study.

Scoring time points[1]	N	BCS								
		2.5	2.75	3	3.25	3.5	3.75	4	4.25	4.5
Phase I										
Day 1	230		1.5	0.7	3.0	16.3	55.5	23.0		
Day 2	230			4.4	23.9	34.5	31.0	6.2		
Phase II[1]										
Day 1	220	2.0	4.5	5.0	20.5	34.3	31.9	1.8		
Day 2	220	1.5	5.0	2.4	24.0	24.8	39.1	2.0	1.2	

[1]The observations on day 2 were taken to assesss intra-assessor agreement.

[2]In phase II, the number decreased due to culling.

Figure S1:

External body points of a buffalo are identified for the BCS system.