Assessing the feasibility of applying the 'welfare quality® assessment protocol for dairy cows' among farms in Kiruhura District, Uganda

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The welfare quality project assesses both animal based and resource based measures for welfare of livestock. However, the welfare quality protocol was developed in the EU and therefore, cannot be used as it is, to assess welfare of animals in production systems in Africa and other areas. Therefore, there is need to adapt the protocol to the production systems in other areas. So, the present study tested its applicability among dairy farms in Kiruhura district in Western Uganda. The testing was carried out during milking and grazing so as to minimize any physical interference with schedules on the farm and not to interfere with the welfare of the animals. The overall aims was to establish whether the welfare quality protocol is suitable for adoption as it is, requires modification or whether some measures needed to be removed from the protocol.

It was a cross-sectional study where the protocol was tested on 24 dairy farms and herd sizes per farm ranged from 15 to 125 cows between September 2020 and January 2021. There were two visits to each of the farms with the first, during early morning around 6:30am which included an interview with the herdsman or owner about care, management and health of animals and also an assessment of welfare through observation during milking. The second visit was in the afternoon during grazing where we assessed farm resources, stockman ship and general environment in which the animals graze. Each of these assessments took about an hour. Data was analysed by categorizing the measures into those that where feasible to use as they are (***table 1***), those that required modification before use (***table 2***) and those that had to be eliminated because they were impractical (***table 3***). Overall, 27 measures were adopted for inclusion in the protocol to assess welfare of dairy cows on farms in Kiruhura district, Uganda (***see chart 1***).

It was concluded that adaptation of the dairy protocol was necessary to ensure that it is feasible to use on dairy farms in Kiruhura district. It was recommended that adaptation of other components of the welfare quality protocols are necessary for other livestock species. Additionally, these adapted protocols require standards/ thresholds for which a farm score is considered acceptable or unacceptable. These thresholds are non-existent but very necessary for effective use of the adapted protocols.

Table 1: Showing measures that where feasible to use as they exist in the welfare quality® protocol

Principle	Welfare Measures	Method of Assessment (Observation in the cow ban and during grazing)
Good feeding	Body condition Score	% of thin/lean cows in the herd based on score of <or=4/10 on 1-10 scale
	Rumen fill score	% of cows with hollow/empty rumen
Appropriate Environment	Thermal comfort; Shade	subjective assessment of shade in the paddocks (presence of trees or built structures)
	Udder dirtiness	>25% of an udder covered with dirt or manure
	hazards	identify potential hazards in the environment (steep hills, cliffs, gullies and sink holes) Presence of dangerous objects/garbage
Good Health	Hampered respiration or coughing	Number of coughs or hampered respiration over 15-20 mins for 20 cows in the cow ban
	Broken tails	Observation of abnormal tails (misaligned or broken at the tail head)
	Lameness	% of cows with uneven weight bearing on a limb that is immediately identifiable and/or obviously shortened stride
	Mortality	% of cows which died on the farm or were culled due to disease or accidents in the last 12 months
	Diarrhoea	% of cows with presence of asymmetrical wet or dry patches of feaces below the tail head which were at least the size of a hand
	Absence of pain from management procedure such as disbudding	History of use of local anesthetics during such procedures

	Nasal and/or ocular discharges	Observation of % of cows with up to 2cm of discharge
	Abrasions, swelling, hair loss	Observation of % of cows with >1cm
Stockmanship	Vocalization	Cows which make audible sound after restraining but before procedure takes place
	Health checks	Record of frequency of health checks
	flight distance	Cows within a group are approached slowly and distance is estimated when withdrawal starts to occur. This requires that they are free to move.
	hitting cows	Percentage of individual cows aggressively hit or poked with force or repeatedly while in the crush
	Herding cattle using stressful approaches	Subjective assessment of any means that cause stress to the animal

Table 2: showing measures that required modification before adoption in the protocol for dairy farms in Kiruhura district, Western Uganda

Welfare Principles	**Measures**	**Method of Assessment (Q: Questionnaire, D: Direct Observation)**	**Reason for Difficulty**	**Adjustment of Measures/ recommendation**
Good feeding	Absence of prolonged thirst	How far cattle must walk to access water, how clean are the water points?	large farms, some watering points are shared among farms	changed to a farm having a watering point; designated time for watering

Good health	Hoof problems	O: Presence of overgrown, abnormally shaped or cracked hooves in individual cows	overgrown grasses that affect visibility	to be measured in short grasses or on dry bare grounds
	Disease history	Q: Occurrence of diseases of minor, major or variable significance to welfare	No records and no competent personnel on majority of the farms	Disease records/information from sub-county/local vet/paravet
Appropriate Environment	Ease of movement	D: Collisions of any part of cow's body occurring when, during lying down with housing equipment	Animals spend most of time in the paddocks and no specific housing structures on majority of farms	Changed to subjective categorical assessment of presence of thick bushes in the paddocks
	Miscatch	D: % of cattle mis-caught in the head/crush	Crush or head gate were not routinely used/ not used at all on the farms	Changed to % of cows miscaught by the ropes during milking/restraint
Appropriate behavior	Expression of social behaviours	D: Video records of agonistic behaviour and signs of agitation or fearfulness	No recordings and Large grazing space whereby animals move more than 4km when grazing	Recording on site and to be carried out only during milking when cows are confined in a moderately sized space

Table 3: showing measures that were eliminated because they were impractical for use in the protocol for dairy cows in Kiruhura district, Uganda

Welfare Principles	Measures	Method of Assessment	Reasons for Removal
Stockmanship	Baulking	Cows which refuse to move forward, or which move backwards, when the route is clear in front in the crush	None was observed. Mainly due to animals moving in large open spaces, unclear welfare implications, required different farm activity
	Running and stumbling	% of cows taking > or =2 strides at a gait faster than a trot, to their knees/hocks contacted the ground, on exiting the race	
	falls	% of cows whose torso contacted the ground on exiting the race	

Chart 1: Overall measures that were adopted for inclusion in the final protocol to assess welfare of dairy cows on farms in Kiruhura district, Uganda