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

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Introduction

- **Why is this important?**
  - Not feasible to transfer animal welfare assessment protocols developed in intensive systems in Europe to pasture-based systems in other areas *(Laven et al., 2016)*
  - Therefor pasture based systems need a protocol tailored to their conditions and nature *(Spigarelli et al., 2020)*
- **What do we know?**
  - Welfare Quality® assessment protocols has measures suitable for assessing welfare of dairy cows *(Webster, 2005)*
  - Applicability among dairy production systems in Uganda has not been examined

Aim and Objectives

- **Objective of the study:**
  - To assess the feasibility and practicability of using the welfare quality® assessment protocol for dairy cows on extensive dairy farms in Kiruhura district during routine milking and herding/grazing
- **Hypothesis:**
  - Is the welfare quality protocol used in assessing dairy cow welfare suitable for adoption in the extensive dairy cow production systems in kiruhura district, Uganda?

Methods

- **Study design**
  - Cross-sectional study

- **Study area**
  - Kiruhura is a district in the Western Region of Uganda part of the larger Ankole sub-region. Kiruhura has 12 sub-counties, a total land area of 1778 sq mi with a human population estimated at 300,800 and cattle population estimated at 270,000. Livestock forms the backbone of economic activity in the district. http://www.kiruhura.go.ug/dept/production-and-marketing

METHODS

- **Data collection**
  - Protocol was tested on 24 dairy farms (herd sizes ranged from 15 to 125 cows) in the months of Dec, 2020 to Jan, 2021
  - Randomly selected from 6 sub-counties in Kiruhura district over two visits.
- **Visit 1**
  - Early in the morning (6:30am) during milking
  - Included a questionnaire-guided interview to evaluate the care, management and health, and animal welfare attributes of the cows when they were still in the ban.

METHODS CONT…

- **Visit 2**
  - In the afternoon (2:00pm) during grazing.
  - Assessed farm resources, stockman ship and environment in which the cows graze.
- Overall, 1256 cows were assessed and 24 farm managers interviewed.
- Each of the assessments (visits) lasted for about an hour**

- **Data analysis**
  - Measures categorised considering farm variations observed during visits

Results 1: Feasible Measures

Principle	Welfare Criteria	Welfare Measures	Method of Assessment (Observation in the cow ban and during grazing)
Good feeding	Absence of hunger	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

Results 1: cont…

Principle	Welfare measure	Method of Assessment (Observation during milking and during grazing or questionnaire interview)
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
	Diarrhea	% 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

Results 1: cont…

Principle	Welfare Criteria	Method of Assessment (Observation during milking and during grazing)
Stockman ship	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

Results 2: modified and included

Welfare Principles	Measures	Method of Assessment Q: Questionnaire, D: Direct Observation	Reason for Difficulty	Adjustment of Measures
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 on farms and no competent personnel on majority of the farms	Disease records/information from sub-county/local vet/paravet

Results 2: cont…

Welfare Principles	Measures	Method of Assessment Q: Questionnaire, D: Direct Observation	Reason for Difficulty	Adjustment of Measures
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

Results 3: removed

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
	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	

Overall measures

Good feeding	Body condition score, absence of prolonged thirst, rumen fill score
Appropriate environment	Thermal comfort, udder dirtiness, hazards, ease of movement, mis-catch
Good health	Hampered respiration or coughing, broken tails, lameness, mortality, diarrhea, absence of pain from management procedures, nasal, ocular discharges, abrasions, swelling, hair loss, hoof problems, disease history
Appropriate stockmanship	Vocalisation, flight distance, hitting cows, herding cattle using stressful approaches, frequency of health checks, expression of social behaviour

Discussion

- The study tested thirty (30) measures for feasibility on extensive dairy farms in Kiruhura
- Three measures were excluded for not being feasible to examine during milking or grazing
- Most of these cows are semi-wild which made physical measurements difficult to measure
- Pastures/grasses were overgrown making measurements such as hoof problems difficult to measure. Even the thick mud in the milking areas couldn’t enable this
- Cows were used to the maternal separation during grazing, therefor vocalisations were not common among the calves and dams
- Most animal based measures were difficult to achieve because of open space milking and observing grazing animals over long grazing distances and hills (not being able to get close to them)
- Six measures were modified, accounts for nature of production system

Conclusions

- Not all measures are feasible for on-farm assessment among extensive dairy farms in Kiruhura, district, Uganda
- Adaptation of existing protocols should be carried out for all species
- There is need to establish and set acceptable and non-acceptable thresholds for each of the measures - tailored to local conditions and production systems

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