



J. Dairy Sci. 101:1–9
<https://doi.org/10.3168/jds.2017-13257>
 © American Dairy Science Association®, 2018.

A survey of selected animal-based measures of dairy cattle welfare in the Eastern Alps: Toward context-based thresholds

A. Zuliani,^{*1} M. Mair,[†] M. Kraševc,[‡] I. Lora,[§] M. Brscic,[§] G. Cozzi,[§] C. Leeb,[†] M. Zupan,[‡] C. Winckler,[†] and S. Bovolenta*

*Department of Food, Agricultural, Environmental and Animal Sciences, University of Udine, 33100 Udine, Italy

†Department of Sustainable Agricultural Systems, University of Natural Resources and Life Sciences, 1180 Vienna, Austria

‡Department of Animal Science, University of Ljubljana, 1230 Domžale, Slovenia

§Department of Animal Medicine, Production and Health, University of Padova, 35020 Legnaro, Italy

ABSTRACT

In the Alps, traditional dairy farms are small-scale operations where vertical transhumance from valley indoor housing systems to highland pasture-based systems is still practiced in summer. Vertical transhumance implies a substantial change of environment, available resources, and management practices from one season to another. In such systems, animal-based welfare measures need to be monitored throughout the year to capture the variation of welfare outcomes, based on which targeted welfare management plans can be implemented. Because the Welfare Quality assessment approach has been tailored to indoor housing and intensive farming systems, the European Food Safety Authority recently developed a welfare assessment protocol for small-scale dairy cattle farms adapted after the Welfare Quality framework. The aim of this study was to assess nonbehavioral animal-based measures as defined by this protocol at different time points for transhumant systems in the Alps. In total, 18 animal-based measures were assessed before, during, and after the mountain pasture period in a sample of 67 small-scale dairy cattle farms practicing vertical transhumance in neighboring provinces of Austria, Italy, and Slovenia. Significant differences between assessments were identified for dirtiness of legs and teats, hairless patches, lesions and swellings, claw condition, ocular discharge, and diarrhea whereas BCS, lameness/severe lameness, vulvar discharge, nasal discharge, and hampered respiration were unchanged between seasons. In addition, a benchmarking exercise was carried out to identify relative boundaries (worst quartile thresholds) for each animal-based measure and to contribute to the discussion about achievable welfare

outcomes for the 2 husbandry conditions that characterize a transhumant system. Worst quartile thresholds indicated a high prevalence of dirtiness (>80%) when cows were kept indoors, high prevalence of hairless patches (65%) before pasture turnout, and high prevalence of very lean cows (>13%) throughout the assessments. On the other hand, the best quartile thresholds for most clinical conditions suggested that high welfare standards (zero prevalence) are widely achievable in mountain farms practicing vertical transhumance during all assessments. The thresholds identified through benchmarking should serve as the basis for an effective context-based welfare management strategy promoting continuous welfare improvement on-farm.

Key words: mountain farm, small-scale, animal welfare, benchmarking

INTRODUCTION

Animal welfare has become a major public concern in the debate regarding sustainable livestock farming (Fraser, 2005), and societal expectations toward improved animal welfare have to be met by all farming systems. To ensure animal welfare, robust assessment methods are required. In Europe, the Welfare Quality project (Blokhus, 2008) has been one of the most important efforts toward the development of on-farm welfare assessment systems aiming at transferring science-based measures into reliable and transparent information for consumers. However, the framework and the measures therein are tailored to indoor housing and intensive farming systems (Welfare Quality, 2009). Despite the ongoing global agricultural transition to intensive and large-scale farming systems, small-scale farms are still the majority in Europe. Mountain farms are one example of traditional small-scale operations (Wymann von Dach et al., 2013), characterized by their environmental and topographical conditions. To address the lack of information regarding welfare as-

Received May 30, 2017.

Accepted October 6, 2017.

¹Corresponding author: zuliani.anna.2@spes.uniud.it

assessment in small-scale dairy farms, the European Food Safety Authority (EFSA) provided a scientific opinion on the feasibility of current welfare assessment methods in so-called nonconventional small-scale dairy farming settings (characterized by, for example, ≤ 75 lactating cows, dual-purpose or local breeds, family-run farms). One of the outcomes was a protocol modified after the Welfare Quality protocol (WQ) applicable to small-scale farming systems (EFSA, 2015) in which cows have access to pasture year round, seasonally (summer), or no access to pasture at all. This protocol was tested on 124 farms in 4 European countries (Austria, France, Italy, and Spain). However, for reasons of consistency, the assessments were performed during winter; thus, cows in mountain farms with summer grazing on highland pastures were only evaluated indoors.

Recently, the importance of performing dairy cattle welfare assessment using animal based-measures (ABM) and acknowledging context-based variability in welfare outcomes was emphasized by the World Animal Health Organization (OIE, 2015) and the International Organization for Standardization (ISO, 2016). Animal based-measures are direct indicators of animal welfare and reflect, among other things, the context of each farming system (i.e., environment, resources, and management practices). For example, dairy cattle farming in the Alps is often characterized by indoor housing during cold months and a pasture-based system during summer. Moreover, in some regions, summer grazing takes place at a higher elevation than the areas where winter farming takes place (Battaglini et al., 2014). This vertical transhumance aims to exploit pastures located at higher altitudes during the warmest months of the year (i.e., from June to September). Most farmers also let cows graze on valley pastures before and after transhumance to facilitate the transition from the indoor management and feeding system to the highland pasture-based system. This management practice implies a substantial change of environment, available resources, and management practices. Thus, in transhumant systems combining indoor winter housing and

pasture-based husbandry during summer, ABM would need to be monitored throughout the year to capture the variation of welfare outcomes resulting from the change in context and to address the main issues characterizing each context.

The aim of this study was to assess ABM, focusing on nonbehavioral clinical outcomes, at different time points in a sample of small-scale dairy cattle farms practicing vertical transhumance in the Eastern Alps (Italy, Austria, and Slovenia). The results could help to identify critical welfare conditions, add to the discussion around achievable welfare outcomes for the different husbandry conditions that characterize a transhumant system, and inform targeted welfare management strategies.

MATERIALS AND METHODS

Study Area and Farms

The survey was carried out in 67 small-scale dairy farms located in the Eastern Alps (Table 1). The study area is characterized by mountains and encompassed neighboring provinces of 3 European countries: Austria (Innsbruck, Tiroler Oberland, Tiroler Unterland; $n = 25$), Slovenia (Osrednjeslovenska, Gorenjska, Goriška; $n = 21$), and Italy (Trento, Bolzano, Vicenza, Udine; $n = 21$). The farms involved were selected through breeders' associations, dairy farmers' organizations, and organic farming associations, as well as personal contacts, and all met the criteria to be considered small-scale farms according to the EFSA (2015) definition. Most farmers sold their products through cooperatives (73%), which produced mainly according to either the European "Geographical Indication" or "organic" certification schemes (54%). Moreover, only farmers practicing the traditional seasonal movement of the entire herd from valley farms to highland pastures during summer were included. Tie-stall systems were predominant (almost 70%) in the sample, as expected for small-scale systems in general and mountain farming systems during winter specifically (Sturaro et al., 2013; Nash et al., 2016).

Table 1. Farm descriptors of 67 alpine dairy farms practicing vertical transhumance

Farm descriptor	Mean	SE	Minimum	Maximum
Dairy cows (no.)	22	1.7	6	63
Milk yield (kg/cow per year)	5,928	183	3,330	10,200
Pasture (h/yr)	3,080	167	1,200	11,568
Concentrate at peak lactation (kg/cow per day)	5	0.3	0	10
Family members working in the farm (no.)	3	0.1	1	6
Income from dairy production (%)	67	3.4	10	100
Farm surface (ha)	18	1.6	0	80
Altitude: winter farm (m above sea level)	622	43.9	6	1,500
Altitude: summer farm (m above sea level)	1,392	37.5	710	2,096

Download English Version:

<https://daneshyari.com/en/article/8501652>

Download Persian Version:

<https://daneshyari.com/article/8501652>

[Daneshyari.com](https://daneshyari.com)