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The management of intensive dairy farms can be improved for better welfare and milk yield ☆

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Abstract

The intensive breeding is often considered a risk of low welfare in dairy cows. Namely, the high yield has been suggested to be *per se* a cause of well-being reduction. Conversely, we have in many farms demonstrated that high milk yielding cows are not necessarily in a bad welfare condition, while many environmental and management problems can cause a distress situation and a reduced milk yield. To confirm these results, in an average yielding dairy farm affected by several problems, the welfare was assessed according to an Integrated Diagnostic System which considers health status, milk yield and quality, feeding strategy, blood profiles etc. The same check-up has been repeated a year later, after some attempts to correct main mistakes previously observed: dry and lactating cow diets, n° of cubicles, hygiene conditions, preparation and milking procedures etc. In one year only part of the mistakes have been fully corrected; nevertheless, the animal response was definitively improved suggesting a better welfare situation: improvement of teat and body condition (BCS) scores and reduction of open days, of legs and feet lesions and of somatic cell count (SCC : 283 vs. 456 cells/μl) as well as an increase of milk yield (25.2 vs. 20.1 kg/d).

Results confirmed that better breeding techniques can optimise the animal welfare and optimise milk yield in the intensive systems.

Keywords: Welfare assessment; Integrated Diagnostic System; Intensive farming; Dairy cow

1. Introduction

In the past few decades the activities of the animal rights movements against intensive farming have gained widespread support, and the European Community has introduced several laws to satisfy this expression of public opinion (Burgat, 2001). Dairy cow farms are often considered unsuitable to guarantee the required level of welfare to the animals. In particular, among the reasons more often quoted, there is the so-called "unnatural" milk productivity of cows, requiring a specific diet which is markedly different in comparison to pasture (Rollin, 2001).

Animal welfare (or well-being) is certainly a challenge for the animal breeders of this beginning

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millennium. Unfortunately, there are different feelings of how to measure it: animalists have an ideological justification mainly based on the human concept of welfare (often with more claims with respect to the actual human standard); otherwise the breeders often mainly consider the immediate economical response with few attention to longer term effects and the ethical aspects. It is therefore time to find an acceptable compromise between these extreme positions, trying to reduce the animalist claims as well as to convince the breeders about the real animal needs (Bertoni, 1999). Nevertheless, to do this, a substantial agreement about welfare concept and its evaluation would be essential.

Unfortunately, there are different feelings regarding the welfare of animals. Some criteria were established (FAWC, 1993) such as the so-called "five freedoms" and in part are easily acceptable, others are difficult to understand, while some are impossible. The main difficulty arises from the fact that too often welfare concerns are dominated by human perceptions and evaluations of welfare standards are maybe based on what the observer believes is good or bad (Newman, 1994). Therefore, the ways to define the animal welfare are not always universally accepted (Fraser and Broom, 1990; Broom and Johnson, 1993; Webster, 1994; Appleby and Hughes, 1997; Bertoni and Calamari, 2001), and this is also true for the assessment of animal welfare.

Despite these methodological difficulties, some comparisons have been established; thus several evidences suggest that also extensive breeding, if not properly managed, could cause poor welfare conditions as summarised by Bertoni and Calamari (2001). On the contrary we have demonstrated that high milk yielding cows are not necessarily in a bad welfare condition (Trevisi et al., 2003).

This suggests that one of the welfare keys is the proper application of the chosen breeding system, while the major importance for welfare evaluation would be attributed to the animal response (behaviour, health, physiology and performances).

The aim of this research was to confirm our previous results, namely that good management supports welfare and good performances. In an average yielding dairy farm, the welfare was assessed, according to an Integrated Diagnostic System, before and after some management adjustments.

2. Materials and methods

The trial was carried out in an average yielding Italian Friesian dairy herd (111 cows), located in the area of Parmesan cheese. The herd was characterised by relatively low milk production, low fertility and high incidences of health problems. Lactating cows were kept in free stall barn, equipped with cubicles and concentrate auto-feeders, while dry cows and pregnant heifers were kept in a free stall barn with deep litter and were moved in a tied stall some days before calving. Cows were fed with two meals of hay (alfalfa and first cut hay for lactating and grass or first cut hay for dry cows and heifers), while concentrate was administered by auto-feeders (lactating cows only).

The starting situation of herd was evaluated according to our Integrated Diagnostic System (IDS – Bertoni et al., 1999), which considers several features of herd: the housing situation, the type and frequency of cow diseases, the group management, the feeding accuracy (diet composition for each group), the milk yield and quality, the health care as well as the general aspect of animals. Furthermore, to confirm the real welfare status of cows, our IDS suggests blood analysis; a representative number of subjects (6 cows) either in dry and early-lactating phase (25–90 days in milk), were bled from jugular vein. The blood samples were collected in Li-heparin tube before morning hay distribution. The samples were analysed for the parameters of the Piacenza Metabolic Profile (Bertoni et al., 1998). On the same cows, a clinical examination was performed evaluating several physio-pathological aspects. In particular, BCS (ADAS, 1986), faecal score (Skidmore et al., 1996), coat cleaning conditions (Faye and Barnouin, 1985), teat score (Neijenhuis, 1998), trimming score (Blowey, 1993), locomotion score (Manson and Leaver, 1988; Wells et al., 1993; Sprecher et al., 1997), foot and limb injuries have been evaluated. Finally, average daily milk yield on the day of inspection as well as the milk composition from the fortnightly routinely controls were recorded.

Afterwards, several changes for lactating and dry cows were gradually introduced in the herd, according to the unsatisfactory situation raised from the preliminary phase. Most of them concerning the diet: concentrate of lactating cows was modified (more protein, mainly soluble, and more rumen and intestinal buffers), the amount of concentrate after calving was