



Survey of preweaning dairy calf-rearing practices in Czech dairy herds

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ABSTRACT

It is important to describe weaknesses in rearing calves not only to improve their welfare, but also to detect areas where current scientific knowledge is poorly integrated into practice. A survey of preweaning calf-rearing practices was conducted using a farmer questionnaire. The survey included 136 farms, representing 11.9% of all dairy cows in the Czech Republic. Mean herd size (\pm standard deviation) was 326 ± 131.4 cows, and mean milk production $7,413 \pm 1,389.5$ kg per cow per year. We evaluated 59 farms with Holsteins (H) and 77 with the Czech Fleckvieh breed (C). The survey revealed that (1) calving in group pens predominated (67.6% of farms); (2) no disinfection of calf navels occurred on 11.8% of herds; (3) pooled colostrum was fed on 15.4% of farms; (4) colostrum quality was controlled on only 44.1% of farms, and only 73.5% of farms had reserve colostrum stocks; (5) nonmarket waste milk was fed in 64.7% of herds but it was pasteurized in only in 6.8% of herds and acidified in 35.2% of herds; (6) milk replacer was mixed with nonmarket waste milk on 52.9% of farms; (7) 58.8% of farms enabled calves to obtain milk by sucking and 41.2% by drinking from a bucket; (8) the main criterion in weaning was calf age (61.7%), followed by acceptance of starter and concentrated feed (19.9%) and lack of housing capacity (18.4%); and (9) newborn calves were individually housed on 96.7% of farms and group-housed on 3.3% of farms. The most marked differences in calf-rearing management between Holstein and Czech Fleckvieh farms were (1) a higher proportion of operations calving in tie-stalls or stanchions in C (6.5%) versus H (1.7%) farms; (2) a higher proportion of untreated navels on C (15.6%) versus H (6.8%) farms; (3) a lower proportion of C (11.7%) versus H (20.4%) farms feeding pooled colostrum; (4) a lower proportion of C (39%) versus H (50.9%) farms monitoring colostrum quality; (5) sucking milk from nipple buckets predominated (61%) on C

farms, whereas drinking from an open bucket was most common (64.4%) on H farms; (6) age was the main criterion in weaning calves of both breeds (C farms: 55.8%, H farms: 69.5%), whereas the second most important criterion was lack of housing capacity (28.6% of farms) on C farms and the amount of consumed starter (25.4%) on H farms. We observed a difference in duration of colostrum period between C herds (median 5 d) and H herds (median 4 d). A tendency was observed for age of calves at weaning (C herds: median at 9.1 wk, H herds: median at 10 wk).

Key words: calf, rearing, farm management, welfare

INTRODUCTION

The health of newborn and older calves is a result of balancing immune defenses, physical and metabolic stresses, nutrition, and environment (Heinrichs, 1993), and calf health affects the economics of a dairy operation (Campbell et al., 2007). Whether calves from the dairy herd are being reared as dairy herd replacements or for beef production, a good start in life is essential (Allen, 2004).

The key features of successful newborn dairy calf management are ensuring proper calving management, strategic navel antiseptics, prompt movement of the newborn calf to hygienic calf housing (Mee, 2008), and efficient colostrum management (McGuirk and Collins, 2004; Godden, 2008). In the weaning period, the amounts and management of milk feeding have immense effects on calf performance, behavior, health, and welfare (Heinrichs et al., 1995; Khan et al., 2007a). The decisive criterion determining a calf's preparedness for weaning should be its current consumption of solid feed (EFSA, 2006). The main purpose in individually housing calves is to minimize the spread of diseases and facilitate control over the animals' acceptance of starter (Bach et al., 2010), but good results have also been achieved among calves housed in pairs, which allows them greater space for movement and social opportunities without negative influence on health and growth (Chua et al., 2002).

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Table 1. Characteristics of 136 dairy farms surveyed compared with all farms in the Czech Republic

Item	Czech Republic	Sample	Holsteins	Czech Fleckvieh
Dairy farms, no.	1,296	136	59	77
Cows, no.	373,705	44,331	20,546	23,875
Mean herd size, no. of cows	273 ¹	326 ± 131.4	348.2 ± 134.8	308.9 ± 127
Mean (± SD) milk production, kg/cow per year	7,128 ¹	7,413 ± 1,389.5	8,495.4 ± 1,257.8	6,585.3 ± 786.5

¹Data from the Czech-Moravian Breeders' Corporation (Kvapilík et al., 2012).

Due to the changes in modern farming, calf-rearing methods differ in individual countries and according to breed (EFSA, 2006); therefore, results from one country are not necessarily relevant for dairy farms in other countries (Svensson et al., 2006). In the United States, calf-rearing management practices differ not only between eastern and western states but also among herds of different sizes (USDA-APHIS, 2012). Vasseur et al. (2012) reported differences in dairy calf management practices between Central Europe States and Canada (Quebec); these were related to calving management and care of the newborn, colostrum management, calf-dam separation, calf feeding, weaning, and calf housing. The first step in a strategy to improve animal welfare at the level of agricultural enterprises is to identify the main risks to animal welfare within a designated sampling of farms (Whay, 2007) or to describe those management methods in use that can most endanger animal welfare (Vasseur et al., 2010).

The goal of this study was to make the first extensive investigation in the Czech Republic to show strategies in farm management at calves from birth to weaning and to obtain relevant information about risk factors in this period of calf rearing. The results were analyzed for all investigated farms as well as separately for farms with Holstein and Fleckvieh breeds to define similarities and differences between those 2 breeds.

MATERIALS AND METHODS

Description and Characteristics of Czech Climate and Dairy Herds

The Czech Republic is situated in moderate temperature zone with evenly proportioned amount of rain during the year. According to Köppen's climate classification, the Czech Republic is classified as cfb (most of the country) and dfb (highlands; Tolasz et al., 2007). In the Czech Republic, the number of cows housed in tiestalls decreased from 77.5% of cows in 2000 to 11% of cows in 2010. In 2000, the average operation in the Czech Republic had 194 cows and 114 in stalls; in 2012, the average operation had 281 cows and 238 cows in stalls (Kvapilík et al., 2001, 2013).

Selection and Description of Herds

One hundred thirty-six farms were chosen for the survey, comprising the 2 main dairy cattle breeds in the Czech Republic: Holstein (**H**), a milk breed, and Czech Fleckvieh (**C**), a dual-purpose breed. Together, these breeds account for 93% of the Czech dairy cow population. Farms with 100 to 600 cows were selected for the evaluation (54.3% of operations in the Czech Republic have 100 to 500 cows). All evaluated farms were enrolled in production testing. Table 1 presents an overview of production data for the selected farms and for Czech farms as a whole.

Data Collection and Description

Data were collected from the 136 farms during 2012. The survey was conducted at breeding seminars focused on translating research findings into practice, with a dedicated time of 90 min set aside for farmers to provide the information using standardized questionnaires. Considering the great interest in these events and the absence of some herd managers, a few questionnaires were sent to these active participants electronically to be completed later. Ambiguities were generally resolved with the breeders immediately, and a few questionnaires were resolved by telephone or at a personal meeting with the farm manager. The topics included in the questionnaire were selected based upon reports of the United States National Animal Health Monitoring System (NAHMS) Dairy Heifer Raising, 2011 report (USDA-APHIS, 2012), NAHMS Dairy 2007 report (USDA-APHIS, 2010a,b), and the Czech Republic's national regulations Decree No. 2008/2004 Coll. on Minimum Standards for the Protection of Farm Animals, Decree No. 136/2004 Coll. on Details of Marking Animals and Their Registration and Registering of Farms and Entities as Defined by the Breeding Act (Czech Republic, 2004a,b). The questionnaire was divided into 7 groups of calf management practices (Table 2). Because some farmers may not want to admit their mistakes, some of the results reported herein, which are based on farmers' answers, may bear a farmer's bias and thus may not completely reflect

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