Short communication: Survey of fresh cow management practices of dairy cattle on small and large commercial farms

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ABSTRACT

The objective was to conduct a survey of current fresh cow management practices that have an effect on health and diseases postpartum considering different herd sizes of commercial dairy farms. A mail survey regarding aspects of the fresh cow program including general management issues, calving, diseases, and veterinary service was conducted utilizing a convenience sample. A total of 429 survey forms were returned (12.0% response rate) and could be used for final analysis. Only 21.6% of the farms had a designated fresh cow pen. Almost every farm executed some type of fresh cow examination. Only 18.5% of farm managers documented the observations. Most of the dairy managers used more or less subjective criteria such as general appearance (97.0%) and appetite (69.7%). Only a minority of the responding dairy managers monitored their fresh cows using objective (fever 33.6%) or semi-quantitative measures (subclinical ketosis 2.8%; body condition score 36.4%). On most farms, the veterinarian visited the herd only if needed (72.6%). Most cases of retained fetal membranes were treated by manual removal (72.3%) and antibiotic pills (89.5%). Several challenges and opportunities were identified to improve cow management practices.

Key words: fresh cow, postpartum, reproduction, herd management survey

Recently, surveys have provided important insights into current dairy management practices and experiences in a variety of areas such as reproductive performance, high milk production, colostrum management, crossbreeding, and antibiotic usage (Caraviello et al., 2006; Kehoe et al., 2007; Fulwider et al., 2008).

Intensive research has focused on the postpartum period of dairy cows. Particularly, risk factors for disease and their relationships to production and reproductive

performance as well as intervention strategies for common disorders such as retained fetal membranes and acute postpartum metritis were intensively studied and recently reviewed (LeBlanc et al., 2006; Azawi, 2008). Despite this science-based information, there is a lack of information about the reality of management practices used by dairy operators for fresh cows.

The few studies available on management practices for postpartum dairy cows focus on specific aspects such as high milk production (Kellogg et al., 2001), management routines for heifers (Nyman et al., 2009), and factors that influence reproductive performance (Caraviello et al., 2006) or animal well-being (Fulwider et al., 2008). Current information about practices implemented in the management of fresh cows considering different herd sizes of commercial dairy farms is not available. Therefore, the objectives were to identify current management practices related to fresh cows in Germany via a survey of dairy managers, paying attention to factors that could influence animal health postpartum.

A survey was developed that consisted of a total of 25 questions regarding aspects of the fresh cow program including general management (6 questions), calving (8 questions), and diseases and veterinary service (11 questions). The survey form was sent by mail using 2 convenience samples in November 2006: 1) to members ($n = 620$) of a regional German Dairy Herd Improvement Service [Landeskontrollverband Brandenburg; region 1, which was located in Brandenburg (northeastern Germany)] and 2) to the customers ($n = 3,000$) of a semen sales company [Rinderzucht Schleswig Holstein; region 2, which was located in Schleswig Holstein (northern Germany)]. The survey forms were returned anonymously by mail or through the AI technicians. Data were analyzed using SPSS for Windows (Version 12.0, SPSS Inc., Munich, Germany). Means and corresponding standard deviations were computed for continuous and ordinal variables, whereas frequencies were tabulated for binary and categorical variables. Questions were analyzed by herd size, with herds categorized as small (<100 cows; $n = 329$), medium (100 to 199 cows; $n = 63$), or large (≥ 200 cows; $n = 37$) based on the

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number of cows. Percentages were rounded to the nearest whole percentage point.

A total of 433 survey forms were returned resulting in a 12% response rate (region 1: 8%, $n = 50$; region 2: 13%, $n = 383$). Four survey forms were not usable and were withdrawn from analysis. On the remaining 429 survey forms most questions had been answered and were used for the final analysis. On 85 and 91% of the returned survey forms all questions were answered regarding general management and calving, respectively. The proportion of all questions answered was lower for items related to disease prevalences (70%). Our response rate was similar to that of a mail survey on crossbreeding (Weigel and Barlass, 2003; 9.5%), but considerably lower than that of a survey on reproductive management that was directly administered by a single interviewer (Caraviello et al., 2006; 67.3%).

Table 1 provides a summary of responses regarding calving, examinations of fresh cows, and prevalence of disorders. A designated maternity pen was available on 90% of the responding dairy farms. In most cases (66%) it was a box stall. However, only 22% of the responding herd managers indicated having a special group or pen for fresh cows. The majority of the responding dairy farmers recorded the type of calving (74%) and estimated the percentage of assisted calvings at 32%. This figure is in agreement with the range previously reported for multiparous (29%) and primiparous (51%) cows (Lombard et al., 2007). The definition of dystocia was subjective and not well defined.

Regarding the frequency of fresh cow examinations, 64% of the responding herd managers answered with "once or twice a day" and 28% with "only if needed." The frequency distribution of fresh cow examinations was different between herd sizes. Small and medium farms checked their fresh cows "only if needed" in 33 and 21%, respectively, whereas only 3% of the large farms implemented this schedule.

Farm managers who had answered the item regarding the frequency of fresh cow examinations "once or twice a day" reported a higher incidence of fever compared with farm managers who had answered "only if needed" (9 vs. 6%). In contrast, farm managers who had answered "only if needed" reported a 2% higher prevalence of clinical ketosis (8 vs. 6%). Our data set did not permit testing a relationship between frequency of examination and estimated prevalence rates of fever and ketosis. It is plausible that a less frequent examination of fresh cows leads to under diagnosis of cows with fever and reduced appetite increasing the risk of ketosis.

Whereas the majority of the responding dairy managers (71%) performed a fresh cow check at least once a week, only 19% also recorded the observations. Most of

the dairy managers used more or less subjective criteria such as general appearance (97%) and appetite (70%). The importance of BCS, testing for subclinical ketosis, and measuring body temperature is well documented (Veerkamp et al., 2000; Benzaquen et al., 2007; Walsh et al., 2007). Furthermore, the diagnostic tools are easy to use and their results repeatable (Edmonson et al., 1989; Iwersen et al., 2009; Burfeind et al., 2010). Yet, only a minority of the responding dairy managers monitored their fresh cows for subclinical ketosis (3%), fever (34%), or BCS (36%). Interesting differences existed between farms that did and did not use certain diagnostic criteria. On farms that checked for general appearance, the estimated prevalence of clinical ketosis was 6 percentage units higher compared with farms that did not check for general appearance (7 vs. 1%). One explanation for this observation is that a regular examination of fresh cows identifies more cows at risk for illness even though the evaluation of general appearance is an unspecific and subjective test. Farms not monitoring body temperature in fresh cows reported lower prevalence rates of metritis (8 vs. 10%) and fever (6 vs. 11%) compared with farms measuring body temperature. Obviously, a fresh cow program including a regular measurement of body temperature identified more cases of metritis (i.e., fever and discharge). If body temperature is not checked several metritis cases remain undiagnosed.

Overall, postpartum disorders were recorded by 39% of the responding dairy farmers. The most frequently recorded disorders were milk fever (62%) and cases of retained placenta (62%). Frequencies of left displacements of abomasum, metritis, and discharge were 46, 44, and 45%, respectively. Cases of fever (29%) and ketosis (26%) were recorded relatively infrequently. The range of reported prevalence rates analyzed as 25 and 75 percentiles for retained placenta (6; 15%), metritis (3; 11%), and discharge (5; 15%) was large.

Table 2 provides a summary of information regarding the reported frequency of veterinary visits and treatment of postpartum disorders. As expected, analyzing farms by different size categories showed considerable differences regarding frequency of veterinary visits. The veterinarian visited the herds "only if needed" in 80, 65, and 19% of small, medium, and large farms, respectively. Veterinary visits were reported once a day in 1, 5, and 32% of small, medium, and large farms, respectively. Overall, farms with <100 cows and with 100 to 199 cows were more similar than farms with ≥ 200 cows. A similar finding was reported for colostrum management practices (Kehoe et al., 2007).

Cases of retained placenta were treated with removal of the fetal membranes (72%), antibiotic pills (90%), and systemic antibiotics (14%). These intervention prefer-

Table 1. Summary of responses by herd managers (n = 429) to questions related to calving and fresh cow management, along with corresponding means $\pm$ SD (continuous variables) or percentages (binary or categorical variables)

Survey question and answer categories	Herd size ¹			All herds
	Small	Medium	Large	
How many cows do you have?	56.0 $\pm$ 19.1	124.2 $\pm$ 23.2	342.5 $\pm$ 166.2	
Is a designated maternity pen available?				
Yes	88 ^a	98 ^b	100 ^b	90
Box stall	61 ^a	74	87 ^b	66
Tie stall	11 ^a	2 ^b	0	8
Combined with sick cows	25	18	14	23
How many stillborn calves do you have per year?	5.9 $\pm$ 2.9	6.0 $\pm$ 3.1	7.5 $\pm$ 2.5	6.0 $\pm$ 2.9
Do you have a special group for fresh cows?				
Yes	15 ^a	22 ^a	81 ^b	22
Do you record the type of calving?				
Yes	73	77	81	74
Proportion of assisted calvings	33.5 $\pm$ 21.1	24.3 $\pm$ 15.2	27.7 $\pm$ 16.4	31.6 $\pm$ 20.3
How often do you check fresh cows?				
2 $\times$ /d and 1 $\times$ /d	59 ^a	72	89 ^b	64
3 $\times$ /wk	3	3	0	3
2 $\times$ /wk	2	3	3	2
1 $\times$ /wk	2	2	5	2
Only if needed	33 ^a	21 ^a	3 ^b	28
How do you check fresh cows?				
General appearance	97	97	97	97
Rumen fill	32	43	41	35
Appetite	72 ^a	65	54 ^b	70
Ketosis test	1 ^a	8 ^b	8 ^b	3
BCS	36	37	41	36
Temperature	30 ^a	41	54 ^b	34
Milk yield	82	83	87	82
Lameness	57 ^a	70	76 ^b	60
Blood samples	0	0	3	1
Do you record these findings?				
Yes	16 ^a	17 ^a	42 ^b	19
Do you record postpartum disorders?				
Yes	36 ^a	39 ^a	64 ^b	39
Which postpartum disorders do you record?				
Milk fever	60	67	77	62
Retained placenta	58 ^a	67	82 ^b	62
Ketosis	26 ^a	14 ^a	48 ^b	26
Metritis within 10 d postpartum	39 ^a	56	68 ^b	44
Left displacement of abomasum	40 ^a	64 ^b	68 ^b	46
Fever	27 ^a	27 ^a	54 ^b	29
Discharge	43	41	64	45

^{a,b}Within a row, different superscripts indicate significant differences between the size categories ($P < 0.05$).

¹Herd size: small = <100 cows (n = 329); medium = 100 to 199 cows (n = 63); large = $\geq$ 200 cows (n = 37).

ences demonstrate a reluctance to abandon a treatment that was traditionally perceived as efficacious. Drillich et al. (2006) provided strong evidence that manual removal of the fetal membranes and administration of antibiotic drugs into the uterus for the treatment of retained placenta were not beneficial. Regarding the use of systemic antibiotic drugs, significant differences existed between small and medium versus large farms. This could be because of the higher incidence rates of fever during the first 10 d postpartum on large farms (Drillich et al., 2007). For cows with discharge and fever indicative of acute postpartum metritis, farm managers used a systemic antibiotic treatment more often (48%) and intrauterine administration of pills less often (53%) compared with cows with retained placenta.

The present study provides a summary of practices related to fresh cow management on small, medium, and large commercial dairy farms in Germany. Several challenges and opportunities were identified. Only a few herds had a designated fresh cow pen (22%). Even though almost every farm executed some type of fresh cow examination, only a minority of farm managers documented those observations (19%). Only one-third of farmers measured the body temperature of fresh cows (34%) and only 3% used a ketosis test. On most farms, the veterinarian visited the herd only if needed (73%), with significant differences between small or medium-sized farms compared with large farms (80 and 65 vs. 19%). Most cases of retained fetal membranes were treated by manual removal (72%) and pills (90%).

Table 2. Percentages of responding herd managers (n = 429) to questions related to veterinary service and treatment of postpartum disorders

Survey question and answer categories	Herd size ¹			
	Small	Medium	Large	All herds
How often does your veterinarian routinely (no emergencies) visit your herd?				
1×/d	1 ^a	5 ^{bc}	32 ^{bd}	4
2×/wk	1	3	14	3
1×/wk	6 ^a	16	30 ^b	10
Every 3 wk	0	0	0	0
1×/mo	11	8	5	10
2×/mo	1	3	0	1
Only if needed	80 ^a	65 ^{bc}	19 ^{bd}	73
How are cows with retained placenta usually treated?				
Removal of placenta	72 ^a	62 ^a	92 ^b	72
Pills	88	91	97	90
Systemic antibiotics	10 ^a	21 ^b	30 ^b	14
Nonsteroidal antiinflammatory drugs	12 ^a	22	24 ^b	15
Other	20	19	19	20
How are cows with discharge and fever treated?				
Pills	51	59	57	53
Systemic antibiotics	46 ^a	46 ^a	73 ^b	48
Nonsteroidal antiinflammatory drugs	32 ^a	49 ^b	49	36
Infusion	20	29	22	21
Other	28	22	16	26

^{a-d}Within a row, different superscripts indicate significant differences between the size categories ($P < 0.05$).

¹Herd size: small = <100 cows (n = 329); medium = 100 to 199 cows (n = 63); large = ≥200 cows (n = 37).

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