

Baseline survey of health prophylaxis and management practices on Swiss dairy farms

P. F. Gordon¹, S. Kohler², M. Reist¹, B. H. P. van den Borne¹, S. Menéndez González¹, M. G. Doherr¹

¹Veterinary Public Health Institute, University of Bern, Switzerland, ²Swiss College of Agriculture, Zollikofen, Switzerland

Summary

Health prophylaxis management practices have acquired a major role in the success of dairy herd health programs, however, little is known about the scope and level of implementation on Swiss dairy farms. The main objective of this study was therefore to provide a general overview of the most important preventive measures which are currently being used on these farms. In March 2011, an online survey with 75 questions was sent to 2'285 randomly selected Swiss dairy farmers. Response rate by question ranged from 35 to 53 %. Within this study, answers were compared between dairy farms with a tie-stall (n = 739) and farms with a free-stall (n = 458). Homeopathic treatments were used by 51 % of the dairy farmers and antibiotic dry cow treatments by 94 %. Farmers with a tie-stall tended to carry out more prophylactic treatments against external parasites, vaccinated their cows more frequently against *Clostridium chauvoei* and *Moraxella bovis*, and carried out claw trimming more frequently than dairy farmers with a free-stall. A higher proportion of dairy farmers with a free-stall had a written feeding plan, carried out regular feed analysis, wore an apron and rubber gloves during milking, and carried out post milking teat disinfection more frequently than dairy farmers with a tie-stall. The data collected in this survey could assist in improving future dairy health communication campaigns in Switzerland.

Keywords: online survey, dairy farms, Switzerland, prophylaxis, management

Basiserhebung zu Gesundheitsprophylaxe und Managementmassnahmen auf Schweizer Milchviehbetrieben

Gesundheitsprophylaxe-Massnahmen spielen eine wichtige Rolle für den Erfolg von Gesundheitsprogrammen für Milchviehherden. Über die Art und den Umfang solcher Massnahmen auf Schweizer Milchviehbetrieben ist jedoch wenig bekannt. Das Hauptziel dieser Studie war, einen allgemeinen Überblick über die wichtigsten präventiven Massnahmen, welche derzeit auf den Betrieben ergriffen werden, zu erarbeiten. Im März 2011 wurde eine Online-Umfrage mit 75 Fragen an 2'285 zufällig ausgewählte Schweizer-Milchproduzenten verschickt. Die Antwortrate betrug je nach Frage 35 bis 53 %. Innerhalb dieser Studie wurden die Antworten zwischen Milchviehbetrieben mit Anbindehaltung (n = 739) und solchen mit Freilaufhaltung (n = 458) verglichen. Homöopathische Behandlungen wurden von 51 % und antibiotische Trockensteller von 94 % der Milchproduzenten eingesetzt. Landwirte mit einem Anbindestall führten mehr prophylaktische Behandlungen gegen externe Parasiten durch, impften ihre Kühe häufiger gegen *Clostridium chauvoei* und *Moraxella bovis* und führten häufiger Klauenpflege durch als Milchviehhalter mit einem Laufstall. Milchviehhalter mit Laufstall richteten sich häufiger nach einem schriftlichen Fütterungsplan, führten regelmässiger Futteranalysen durch, trugen beim Melken öfter eine Schürze und Gummihandschuhe und desinfizierten die Zitzen nach dem Melken häufiger als Milchviehhalter mit einem Anbindestall. Resultate aus dieser Umfrage können in zukünftige Informationskampagnen zur Gesundheit von Milchvieh in der Schweiz einfließen.

Schlüsselwörter: Online-Umfrage, Milchviehbetriebe, Schweiz, Prophylaxe, Management

Introduction

Udder diseases, reproductive disorders, lameness and metabolic disorders have traditionally been ranked as key

dairy health issues (Frei et al., 1997; Wells et al., 1998). In the past, dairy management focused on the treatment of these diseases, but in the last 30 years, disease prevention has become a major tool in the success of dairy health

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programs (LeBlanc et al., 2006). These veterinary preventive measures together with management programs have proven to be a highly profitable investment for dairy farmers (Heider et al., 1980; Williamson, 1980).

In the United States, information on preventive measures is regularly collected for different livestock species through national monitoring systems. These surveys collect, analyze and disseminate information regarding animal health, management and productivity (Hueston, 1990). This type of data is essential as it helps farmers to take decisions regarding housing, nutrition and general farm management, and it allows policy makers and veterinarians to improve and develop animal health preventive programs. However, at present little data is available for Switzerland on how consistently and effectively the various preventive measures are implemented on each farm. The main reasons are that (1) these measures are carried out individually by each farmer and (2) there is currently no governmental or veterinary institution in Switzerland which regularly collects such information. The main objective of this survey was to provide a more general overview of the main preventive veterinary measures which are currently being used by Swiss dairy farmers. The identification of possible management deficiencies, and significant differences between tie-stall and free-stall housing systems was also addressed in this paper.

Animals, Material and Methods

Target population and sample

Swiss dairy farms, which regularly marketed milk during 2010 and with a minimum of 11 dairy cows, were considered for this study. Seasonal alpine pasture holdings were excluded. The final target population included 22'141 dairy farms with an average herd size of 24 dairy cows. The approximate sample size needed to estimate proportions between 40 and 60% with 5% absolute error and 99% confidence was derived using Win Episcopo 2 software. Considering an expected response rate of 30%, at least 2'200 surveys had to be sent. Eventually, a stratified random sample of 2'285 dairy farms (with stratum sample sizes proportional to the cantonal population size) was drawn from the available sampling frame using computer-generated random numbers.

Questionnaire design

The questionnaire was developed and evaluated by a group of experts which included dairy farmers, agricultural advisors, veterinarians and policy makers. A group of 40 students from the Swiss College of Agriculture with a dairy farming background contributed to the final validation of the questionnaire. Five different sections gathered information regarding general farm management, feeding practices, reproductive management, udder health and

demographic data. The questionnaire included a total of 75 questions, out of which 47 were closed, 24 were semi-closed and 4 were open-ended. All questions referred to management practices performed in 2010. The online questionnaire was developed in German, French and Italian within the open source survey application LimeSurvey (www.limesurvey.org). A copy of the questionnaire is available upon request from the corresponding author.

Data collection

The online questionnaire tool was used for sending personalised emails with the link to the online questionnaire and for the collection of all responses. An informative advertisement campaign explaining the project was published in several dairy production magazines and on websites 1 week before the questionnaire was sent out (March 2011). Two follow up reminder emails were sent to all non-responders 2 and 3 weeks after the initial sending. The final reminder included a deadline for returning the questionnaire, which was set at 6 weeks after the first email had been sent. To increase the response rate, a prize lottery was organised among those farmers that completed the survey, and summary results were agreed to be sent to all participants at the end of the data collection phase.

Statistical analyses

Responses were downloaded from the survey tool in a data table format (MS Excel). Data analysis was performed using the NCSS 2007 statistical software package. Categorical variables were described using counts and proportions while quantitative variables were presented as medians and 10th–90th percentile ranges. Cross tabulations and χ^2 tests were used to obtain frequencies and associated P-values for the differences between farms with a tie-stall and farms with a free-stall. P-values ≤ 0.05 were regarded as statistically significant.

Results

Response rate

Of the 2'285 dairy farmers invited to participate in the online questionnaire 1'065 (47%) completed the survey. Another 236 farmers started the online questionnaire but only completed some of the questions. As all questions were optional, the response rate for each question varied from 35 to 53%. The completed questionnaires response rate for each language was German 46%, French 46% and Italian 53%.

Demographic composition of the sample

The age of the respondents ranged from 22 to 77 years (median 44). Farmers with a free-stall had a higher agricultural education and attended continual agricultural

training more frequently than farmers with a tie-stall ($P < 0.001$). Farmers with a free-stall also showed more interest in taking part in future studies (74%) as opposed to farmers with a tie-stall (61%, $P < 0.001$).

Farm characteristics

The majority of farms 739/1'197 (62%) had tie-stalls when compared to free-stalls. Farms with tie-stalls were

significantly more abundant in mountainous production zones, had fewer cows and were less frequently organic (Tab. 1). In addition, farms with a tie-stall used closed stalls, mats to cover the lying surface, and sawdust as bedding material more frequently than farms with a free-stall. Pipeline milking was the most frequently used milking system in farms with a tie-stall and herringbone milking parlours in farms with a free-stall. The number of milking units per farm ranged from 1 to 17 (median 3).

Table 1: Characteristics of Swiss dairy farms with > 10 cows (in 2010).

Variable (number of responses)	Dairy farms n (%)	Free-stalls n (%)	Tie-stalls n (%)	X ² P-values
Production zone (1063)				
Mountain	372 (34.9)	110 (26.7)	248 (40.9)	< 0.001
Hill	186 (17.4)	70 (17.0)	108 (17.8)	
Valley	505 (47.4)	231 (56.2)	249 (41.1)	
Number of cows (1069)				
11–25	264 (24.6)	93 (22.6)	354 (56.3)	< 0.001
26–40	422 (39.4)	155 (37.7)	225 (35.8)	
41–55	206 (19.2)	97 (23.6)	39 (6.2)	
> 56	177 (16.5)	66 (16.0)	10 (1.5)	
Type of farming (1204)				
Conventional	1083 (90.0)	385 (84.4)	690 (93.4)	0.001
Organic	121 (10.0)	71 (15.6)	49 (6.6)	
Type of stall (1200)				
Closed/warm stall	839 (70.0)	114 (25.1)	717 (97.4)	< 0.001
Open/cold stall	361 (30.0)	341 (74.9)	19 (2.6)	
Lying surface (1161)				
Rubber mat	654 (56.3)	33 (7.9)	615 (83.7)	< 0.001
Comfort mat	126 (10.8)	60 (14.4)	65 (8.8)	
No mat	381 (32.8)	324 (77.7)	55 (7.5)	
Type of bedding substrates (1202)				
Chopped straw	685 (56.9)	259 (56.8)	420 (57.0)	0.94
Straw	507 (42.1)	120 (26.3)	381 (51.7)	< 0.001
Sawdust	234 (19.4)	42 (9.2)	189 (25.6)	< 0.001
Dry manure and straw	167 (13.8)	130 (28.5)	37 (5.0)	< 0.001
Hydrated lime and straw	99 (8.2)	80 (17.5)	19 (2.6)	< 0.001
Wood shavings	25 (2.0)	2 (0.4)	22 (3.0)	0.002
Sand	2 (0.1)	2 (0.4)	-	0.07
Other: Hydrated lime	30 (2.4)	10 (2.1)	20 (2.7)	< 0.001
Other: Compost	6 (0.4)	6 (1.3)	-	< 0.001
Milking system (1193)				
Pipeline milking	536 (44.8)	42 (9.3)	475 (66.8)	< 0.001
Bucket milking	242 (20.2)	5 (1.1)	233 (32.7)	
Herringbone milking parlour	174 (14.5)	168 (37.3)	2 (0.3)	
Tandem milking parlour	162 (13.5)	157 (34.9)	1 (0.1)	
Side-by-side milking parlour	61 (5.1)	60 (13.3)	-	
Robot	17 (1.4)	17 (3.8)	-	
Rotary milking parlour	1 (0.1)	1 (0.2)	-	

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General farm health prophylactic measures

Clostridium chauvoei and *Moraxella bovis* vaccines, prophylactic treatments against external parasites, and regular claw trimming (at least twice a year) were management practices which were more frequently used on farms with tie-stalls than on farms with free-stalls (Tab. 2). The most frequently used dairy cattle replacement system was own rearing (86%). Over 61% of the farmers reported that they occasionally bought in new cows. Before purchasing a cow, 44% of the farmers carried out a California Mastitis Test (CMT), 35% checked the somatic cell count data from the breeding associations, 32% checked the claw condition, and 10% took milk samples for bacteriological culturing. The measures taken after purchase included the CMT (80%), milking the cows separately or last (22%), taking samples for bacteriological culturing (7%), and isolation of newly introduced cows (3%). Homeopathic treatments were regularly used by 12% of the farmers and occasionally by 39%. Herbal medicine treatments were regularly used by 5% of the farmers and occasionally by 52%.

The use of these alternative treatments was higher on organic farms ($P < 0.001$).

Feeding management and metabolic disorders prophylaxis

More dairy farmers with a free-stall had a written feeding plan, carried out feed analysis, monitored the fat/protein ratio in milk, used Body Condition Scoring, and reported less often an increase in body condition over the dry period than dairy farmers with a tie-stall (Tab. 3). Most of the farmers gave different feed rations to lactating and dry cows. The number of concentrate intakes per day was higher in free-stalls (median 4, 10th–90th percent interval 2–10) than in tie-stalls (2, 2–4, $P < 0.001$). Ketosis prophylactic measures included providing transit feed before calving (84%), providing propylene glycol supplements before or after calving (55%), performing urine or milk ketone test strip controls (49%), providing buffer supplements such as sodium bicarbonate (26%), and giving yeast supplements after calving (21%). Milk fever prophylactic measures included giving calcium supplements

Table 2: General health prophylactic measures of Swiss dairy farms with > 10 cows (in 2010).

Variable (number of responses)	Dairy farms n (%)	Free-stalls n (%)	Tie-stalls n (%)	χ^2 P-values
Vaccination (1170)				
Bluetongue virus (BTV-8)	834 (71.2)	308 (68.9)	520 (72.8)	0.15
<i>Dyctiocalus viviparus</i>	249 (21.2)	94 (21.0)	153 (21.4)	0.87
<i>Clostridium chauvoei</i>	109 (9.3)	28 (6.3)	81 (11.3)	0.003
Ringworm	71 (6.0)	31 (6.9)	40 (5.6)	0.35
<i>Moraxella bovis</i>	55 (4.7)	10 (2.2)	45 (6.3)	0.001
<i>Escherichia coli</i> , Rotavirus, Coronavirus	54 (4.6)	28 (6.3)	25 (3.5)	0.02
No vaccination	233 (19.9)	94 (21.0)	137 (19.2)	0.44
Parasite control measures (1179)				
Prophylactic treatment for internal parasites	597 (50.6)	217 (48.5)	376 (51.9)	0.25
Prophylactic treatment for external parasites	334 (28.3)	85 (19.0)	246 (34.0)	< 0.001
Slaughterhouse condemnations are monitored	231 (19.5)	114 (25.5)	117 (16.2)	< 0.001
Grazing management	226 (19.1)	86 (19.2)	138 (19.1)	0.93
No measures	303 (25.7)	119 (26.6)	182 (25.1)	0.57
Lameness control measures (1189)				
Stall flooring kept dry	604 (50.8)	129 (28.5)	471 (64.8)	< 0.001
Regular lameness control checks	603 (50.7)	224 (49.4)	375 (51.6)	0.47
Yearly claw trimming	576 (48.4)	245 (54.0)	327 (44.9)	0.001
Regular claw trimming (at least twice a year)	543 (45.6)	149 (32.8)	390 (53.6)	< 0.001
Own claw trimming immobilizing system	489 (41.1)	226 (49.9)	258 (35.5)	< 0.001
Feed supplements (e.g. biotin)	481 (40.4)	180 (39.7)	299 (41.1)	0.63
Disinfectant treatments available	375 (31.5)	131 (28.9)	240 (33.0)	0.14
Regular claw cleaning	80 (6.7)	44 (9.7)	36 (5.0)	0.001
Regular foot baths	25 (2.1)	17 (3.8)	8 (1.1)	0.002
No prophylactic control measures	108 (9.0)	59 (13.0)	49 (6.7)	< 0.001

Table 3: Feeding practices of Swiss dairy farms with > 10 cows (in 2010).

Variable (number of responses)	Dairy farms n (%)	Free-stalls n (%)	Tie-stalls n (%)	X ² P-values
Written feeding plan (1039)				
Yes	449 (43.2)	230 (57.2)	206 (34.0)	< 0.001
No	590 (56.8)	172 (42.8)	399 (66.0)	
Feed analysis (1051)				
Yes	684 (65.0)	301 (73.4)	367 (60.2)	< 0.001
No	367 (35.0)	109 (26.6)	243 (39.8)	
Fat/protein ratio in milk is monitored (1066)				
Yes	930 (87.2)	378 (91.3)	524 (84.4)	0.004
No	136 (12.7)	36 (8.7)	97 (15.6)	
Body Condition Score is monitored (1010)				
Yes	313 (31.0)	157 (39.6)	144 (24.7)	< 0.001
No	697 (69.0)	239 (60.4)	438 (75.3)	
Body condition of dairy cows at calving (1056)				
Higher than at drying off (fat build-up)	483 (45.0)	165 (40.1)	304 (49.5)	< 0.001
The same as at drying off	458 (42.7)	207 (50.3)	240 (39.0)	
Lower than at drying off (fat breakdown)	66 (6.1)	27 (6.5)	34 (5.5)	
I do not know	49 (4.5)	12 (2.9)	36 (5.8)	
Feed ration for dairy cows (1086)				
Different for lactating and dry cows	864 (79.5)	337 (80.6)	498 (78.5)	0.41
Different for different production groups	272 (25.0)	59 (14.1)	201 (31.7)	< 0.001
Different for each cow	168 (15.4)	73 (17.5)	92 (14.5)	0.19
The same for all cows	105 (9.6)	52 (12.4)	52 (8.2)	0.02

at calving (88%), providing vitamin D supplements before calving (53%), providing feed high in phosphorus and low in calcium at the end of the lactation or before calving (48%), and reducing the pH of the ration with organic acids during the last 2 weeks before calving (13%). Hypomagnesaemia prophylactic measures included feeding hay before grazing (93%) and giving magnesium supplements in spring/autumn (79%).

Reproductive management and reproductive disorders prophylaxis

Ease of calving and fertility of the dam were breeding values that were more important when selecting a bull for artificial insemination for farmers with a tie-stall than for farmers with a free-stall (Tab. 4). An oestrus calendar was used by 91% of the farmers. Farmers with a free-stall tended to carry out more heat detection checks per day (median 3, 10th–90th percent interval 2–5) than farmers with a tie-stall (3, 2–4, P = 0.007). Heat signs or techniques such as changes in the milk production or the use of activity meters were more frequently used by farmers with a free-stall. In order to improve the fertility rate, feed supplements such as selenium and vitamin E were given to cows on 66% of the farms. The majority of farmers carried out pregnancy

checks on all cows and provided clean bedding material at calving. The median voluntary waiting period was 50 (35–65) days.

Udder health management and mastitis prophylaxis

The drying off method most frequently applied was gradual cessation of milking as opposed to abrupt cessation (Tab. 5). Blanket antimicrobial dry cow therapy was used on 56% of the farms. The application of internal teat sealants at drying off was used on 19% of the farms, out of which a higher proportion were farms with free-stalls. The use of an apron, rubber gloves, and regular hand cleaning during milking were practices that were more frequently conducted by farmers with a free-stall. Teat cleaning was carried out on most farms before fore-milking. The materials most frequently used for teat cleaning were wet towels with disinfectant, single use paper and wood wool. Most farmers (63%) used fresh teat cleaning materials after each cow. Post milking teat disinfection was carried out more frequently on farms with a free-stall. After milking, 47% of the farmers took special measures to prevent the cows from lying down. Cows with a positive CMT were milked last on 47% of the farms.

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Table 4: Reproductive management of Swiss dairy farms with > 10 cows (in 2010).

Variable (number of responses)	Dairy farms n (%)	Free-stalls n (%)	Tie-stalls n (%)	X ² P-values
Three most important characteristics when selecting a bull for insemination (1093)				
Fat or protein content in milk	634 (58.0)	245 (57.9)	376 (58.4)	0.88
Somatic cell count in milk	516 (47.2)	214 (50.6)	286 (44.4)	0.04
Milk yield	494 (45.2)	202 (47.8)	277 (43.0)	0.12
Exterior (format, udder ...)	395 (36.1)	157 (37.1)	232 (36.0)	0.71
Ease of calving	300 (27.4)	89 (21.0)	205 (31.8)	< 0.001
Length of productive life	234 (21.4)	115 (27.2)	117 (18.2)	< 0.001
Milking speed/persistence of lactation	177 (16.1)	75 (17.7)	96 (14.9)	0.21
Fertility of the dam (e.g. non-return rate)	149 (13.6)	44 (10.4)	101 (15.7)	0.01
Total merit values	125 (11.4)	41 (9.7)	79 (12.3)	0.19
Beef production	71 (6.5)	20 (4.7)	50 (7.8)	0.05
Three most important heat-detection signs/techniques (1095)				
Immobility reflex	958 (87.6)	395 (93.4)	540 (83.9)	< 0.001
Mounting other cows	737 (67.4)	313 (74.0)	399 (62.0)	< 0.001
Swollen red vulva/mucous discharge	646 (59.1)	163 (38.5)	467 (72.5)	< 0.001
Changes in milk production	360 (32.9)	180 (42.6)	173 (26.9)	< 0.001
Restlessness/off feed	348 (31.8)	117 (27.7)	226 (35.1)	0.01
Cow/bull used as heat detectors	33 (3.0)	13 (3.1)	20 (3.1)	0.97
Activity meters (e.g. pedometer)	19 (1.7)	18 (4.3)	1 (0.2)	< 0.001
Mount indicators (e.g. tail paint)	10 (0.9)	4 (0.9)	6 (0.9)	0.98
Hormonal heat synchronization	7 (0.6)	1 (0.2)	6 (0.9)	0.16
Pregnancy checks (1092)				
All cows	581 (53.2)	242 (57.2)	324 (50.4)	< 0.001
Only problem cows	410 (37.5)	131 (31.0)	270 (42.0)	
No cows	101 (9.2)	50 (11.8)	49 (7.6)	
Peripartum measures (1093)				
Clean bedding material	1006 (92.0)	382 (90.3)	599 (93.3)	0.07
Ropes or chains available (if required)	846 (77.4)	328 (77.5)	494 (76.9)	0.82
Hands and arms are cleaned if intervention is required	810 (74.1)	301 (71.2)	489 (76.2)	0.06
Intervention at calving is normally avoided	480 (43.9)	209 (49.4)	258 (40.2)	0.003
Calving pen available	409 (37.4)	352 (83.2)	45 (7.0)	< 0.001
Tail, vulva and surroundings are cleaned	231 (21.1)	63 (14.9)	162 (25.2)	< 0.001
Mechanical obstetricians available (if required)	127 (11.6)	51 (12.1)	72 (11.2)	0.67
Calving environment is cleaned and disinfected	72 (6.5)	34 (8.0)	35 (5.5)	0.09
No special measure	7 (0.6)	3 (0.7)	4 (0.6)	0.86

Discussion

This is the first descriptive trilingual online survey for health prophylaxis and management practices on Swiss dairy farms. The final dataset represented approximately 5% of the target population and provided a good geographical representation of all Swiss dairy farms. Farms with less than 11 cows were not included in the survey, resulting in an underrepresentation of small dairy farms in the dataset. However, the size of dairy farms in Switzerland has noticeably increased

in the last decades and consequently it was decided that the larger farms should be favoured. The highest response rate obtained for a single question was 53% which is comparable to the response rate of other dairy farm questionnaires (Peeler et al., 2000; Plozza et al., 2011). The age range of the respondents indicated that there was no type of age bias and that the older dairy farmer generations can as easily be contacted by email as the younger ones.

In Switzerland, smaller farms on mountainous zones tend to have tie-stalls and larger farms in valleys tend to

Table 5: Udder health management of Swiss dairy farms with > 10 cows (in 2010).

Variable (number of responses)	Dairy farms n (%)	Free-stalls n (%)	Tie-stalls n (%)	X ² P-values
Cessation of milking (1187)				
Gradual	615 (51.8)	188 (42.0)	410 (58.0)	< 0.001
Abrupt	572 (48.2)	260 (58.0)	297 (42.0)	
Dry-cow antibiotic treatment (1158)				
Blanket	643 (55.5)	251 (57.7)	375 (54.1)	0.38
Selective	444 (38.3)	156 (35.9)	277 (40.0)	
No treatment	71 (6.1)	28 (6.4)	41 (5.9)	
Dry-cow internal teat sealant application (823)				
Blanket	47 (5.7)	23 (7.1)	21 (4.3)	0.001
Selective	110 (13.3)	58 (17.8)	49 (10.3)	
No treatment	666 (80.9)	244 (75.1)	408 (85.4)	
Hygiene measures taken at milking (1171)				
Hand washing before milking	935 (79.8)	330 (76.2)	585 (82.9)	0.006
Clean clothing	686 (58.5)	249 (57.5)	418 (59.2)	0.57
Hand cleaning during milking	350 (29.8)	177 (40.9)	167 (23.7)	< 0.001
Apron	195 (16.6)	133 (30.7)	57 (8.1)	< 0.001
Rubber gloves	143 (12.2)	98 (22.6)	39 (5.5)	< 0.001
No special measures	115 (9.8)	22 (5.1)	87 (12.3)	< 0.001
Milking procedures (1184)				
First teat cleaning and then fore-milking	528 (44.5)	173 (39.0)	344 (48.6)	< 0.001
First fore-milking and then teat cleaning	431 (36.4)	192 (43.2)	224 (31.6)	
Only teat cleaning	203 (17.1)	76 (17.1)	122 (17.2)	
Only fore-milking	16 (1.3)	-	16 (2.3)	
Neither teat cleaning nor fore-milking	6 (0.5)	3 (0.7)	2 (0.3)	
Teat cleaning material used (1165)				
Wet towels with disinfectant	485 (41.6)	203 (45.6)	271 (39.3)	0.03
Single use paper	449 (38.5)	175 (39.3)	267 (38.8)	0.84
Wood wool	341 (29.2)	81 (18.2)	250 (36.3)	< 0.001
Washable towel	41 (3.5)	23 (5.2)	16 (2.3)	0.01
Wet towels without disinfectant	33 (2.8)	10 (2.2)	21 (3.0)	0.41
No material is used	17 (1.4)	5 (1.1)	11 (1.6)	0.50
Post-milking teat disinfection (1175)				
Teat dipping	750 (63.9)	320 (72.2)	406 (58.0)	< 0.001
Teat spray	165 (14.0)	74 (16.7)	88 (12.6)	
None	260 (22.1)	49 (11.1)	206 (29.4)	
California Mastitis Test positive cows milking strategy (1173)				
Milked last	549 (46.8)	77 (17.4)	461 (65.5)	< 0.001
Milked with a different milking unit	375 (31.9)	179 (40.5)	184 (26.1)	
Milking unit is rinsed	107 (9.1)	84 (19.0)	22 (3.1)	
Milking unit is disinfected	38 (3.2)	33 (7.4)	5 (0.7)	
No special strategy	104 (8.8)	68 (15.4)	31 (4.4)	

have free-stalls. Open stalls, which have been associated with improved ventilation, healthy animals and less investment costs were only used on 3 % of the tie-stalls and 75 % of the free-stalls.

Swiss farmers mainly vaccinate dairy cattle up to 3 years of age against *Clostridium chauvoei* before the alpine grazing season begins, which can explain why farms with a tie-stall (which are more frequent on mountainous zones) used

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this vaccine more frequently. Regular functional claw trimming (e.g. twice yearly) is considered to be an excellent mean of monitoring claw health and to control lameness problems. However, the results of this survey indicated that most farmers carried out claw trimming once a year. The increasing restrictions on the use of antibiotics and the appearance of antibiotic resistant bacterial strains (Roesch et al., 2006) lead farmers to consider alternative treatments. A study performed on Swiss organic dairy farms showed that in 1997/98 alternative veterinary methods were at least partially used on 36% of the farms (Busato et al., 2000). The effectiveness of these methods and specially homeopathy is very controversial in the scientific community (Jonas et al., 2003). Nevertheless, in this study 57% and 51% of the farmers reported to use herbal medicine and homeopathy respectively, indicating that an increasing number of dairy farmers are turning towards these alternative methods.

Overfeeding dairy cows during the dry period is considered as a mismanagement of energy feeding in dairy rations. Cows that increase in body condition during the dry period are more susceptible to metabolic diseases (Rukkwamsuk et al., 1999). However, most of the farmers reported that their cows gained body condition during the dry period, indicating a lack of information and awareness towards this prophylactic measure.

The benefits of using blanket dry cow therapy at drying off have been described in the literature (Halasa et al., 2009; Williamson et al., 1995). However, few farmers reported to use blanket dry cow antibiotic treatments (56%) or blanket internal teat sealant treatments (6%) at drying off. To prevent the introduction of bacteria into the teat canal, fore-milking should be carried out before teat cleaning. However, only 36% of the farmers followed

this recommendation. Cows should be kept standing after milking (e.g. by offering them feed) but only 47% of the farmers took any special measure to prevent the cows from lying down.

Depending on the circumstances of each farm, dairy farmers have to constantly decide which are the best management practices and prophylactic strategies for their animals. The results from this survey have revealed some significant differences between the two different housing systems. In addition, it has been shown that some of the prophylactic measures which are considered to be most effective in maintaining a healthy herd are not always implemented by the farmers. Future health control programs should emphasise the importance of health prophylaxis and raise awareness on the benefits of a good dairy health management. The good response rate of this survey indicated that farmers are willing to participate in surveys and are eager for information and advice regarding dairy health control programs.

Acknowledgements

The study was funded by the Swiss Federal Veterinary Office and supported by Swissgenetics and the Swiss Milk Producers association. The authors would like to thank the students from the Swiss College of Agriculture for their collaboration and all the farmers who kindly completed the questionnaire. In addition, we would like to acknowledge the TSM Trust Ltd., Dirk Strabel (Swiss Bovine Health Service), Andreas Häberli (Inforama Rütli) and Marc Kirchhofer (Clinic for Ruminants, University of Bern) for their advice and valuable input.

Recensement de base quant à la prophylaxie sanitaire et aux mesures de management dans les exploitations laitières suisses

Les mesures de prophylaxie jouent un rôle important dans le succès des programmes sanitaires pour les troupeaux laitiers. On sait toutefois peu de chose sur le genre et l'extension de ces mesures dans les exploitations laitières suisses. Le but principal de cette étude était d'obtenir une vue générale des principales mesures préventives qui sont acutellement prises dans les exploitations. En mars 2011 un questionnaire online de 75 questions a été adressé à 2285 producteurs de lait suisses choisis au hasard. Le taux de retour se montait, selon les questions, entre 35% et 53%. On a comparé les réponses provenant des exploitations avec stabulation entravée (n = 739) à celles des stabulations libres (n = 458). Des traitement homéopathiques étaient utilisés par 51% des producteurs et 94% d'entre

Un'indagine basata sulla profilassi sanitaria e sulle misure di gestione nelle aziende svizzere di bestiame da latte

Misure sanitarie preventive, svolgono un ruolo importante nel successo dei programmi sanitari nelle mandrie di bestiame da latte. Purtroppo si conosce poco sulla natura e la portata di tali misure nelle aziende da latte svizzere. L'obiettivo principale di questo studio era di sviluppare un quadro generale delle più importanti misure preventive che sono attualmente in corso nelle aziende agricole. Nel marzo 2011 un sondaggio online di 75 domande è stato inviato a caso a 2'285 produttori di latte svizzeri. Il tasso di risposta è stato in funzione della domanda e si situava tra il 35 e il 53%. In questo studio, sono state confrontate le risposte tra le aziende di allevamento di bovini da latte a stabulazione fissa (n = 739) e quelle a stabulazione libera (n = 458). Sono stati utilizzati nel 51% dei casi i trattamenti

eux utilisaient des antibiotiques lors du tarissement. Les agriculteurs exploitant une stabulation entravée appliquaient plus de mesures prophylactiques contre les parasites externes, vaccinaient leurs vaches plus souvent contre *Clostridium chauvoei* et *Moraxella bovis* et soignaient plus fréquemment les onglons que ceux exploitant une stabulation libre. Les producteurs avec stabulation libres utilisaient plus souvent un plan d'affouragement écrit et faisaient plus régulièrement des analyses de fourrage, portaient plus souvent une blouse et des gants lors de la traite et désinfectaient plus fréquemment les trayons après la traite que ceux exploitant une stabulation entravée. Les résultats de cette enquête peuvent trouver un emploi dans de futures campagnes d'information sur la santé du bétail laitier en Suisse.

ti omeopatici e nel 94 % sono stati applicati antibiotici in asciutta. Gli agricoltori con stalle a stabulazione fissa hanno eseguito più trattamenti profilattici contro i parassiti esterni, hanno vaccinato le mucche più spesso contro il *Clostridium chauvoei* e la *Moraxella bovis* e hanno dato maggiore importanza alla cura dello zoccolo che i produttori di latte con stabulazione libera. I produttori di latte a stabulazione libera si orientano spesso tramite un piano di alimentazione scritta, eseguono regolarmente analisi dell'alimentazione, più spesso portano per mungere un grembiule e guanti di gomma e disinfettano i capezzoli dopo la mungitura più frequentemente che i produttori di latte con stabulazione fissa. I risultati di questa indagine possono essere incorporati nelle future campagne d'informazione sulla salute dei bovini da latte in Svizzera.

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Corresponding author

Prof. Dr. Marcus Doherr
Veterinary Public Health Institute
Vetsuisse Faculty, University of Bern
Schwarzenburgstrasse 155
CH-3097 Bern
Tel.: +41 (0)31 631 5730
Fax: +41 (0)31 631 57 49
marcus.doherr@vetsuisse.unibe.ch

Received: 6 December 2011

Accepted: 14 March 2012