

Supplement 3: Responses of the participating farms (total and percentage) to the Questionnaire of the study Prevalence and risk factors for the occurrence of ESBL *E. coli* in pre-weaned dairy calves and their dams on large dairy farms in Germany—a cross-sectional study

		Applicable		not applicable		no specification	
		total	%	total	%	total	%
1	Conventional farming	71	98,6	1	1,4	0	0
2	Organic farming	1	1,4	71	98,6	0	0
3	Cattle husbandry in 3 km radius	44	61,1	26	36,1	2	2,8
4	Horse husbandry in 3 km radius	21	29,2	49	68,1	2	2,8
5	Pig husbandry in 3 km radius	28	38,9	42	58,3	2	2,8
6	Goat/sheep husbandry in 3 km radius	7	9,7	63	87,5	2	2,8
7	Poultry husbandry in 3 km radius	9	12,5	61	84,7	2	2,8
8	Regular buy-in of livestock	22	30,6	50	69,4	0	0
8a	Buy-in > 1 x per month	2	2,8	70	97,2	0	0
8b	Buy-in every 1-3 months	11	15,3	61	84,7	0	0
8c	Buy-in less than every 3 months	3	4,2	69	95,8	0	0
8d	From one fixed origin farm	10	13,9	62	86,1	0	0
8e	Several, fixed origin farms	6	8,3	66	91,7	0	0
8f	Several, changing origin farms	6	8,3	66	91,7	0	0
9	Outsourced heifer rearing	51	70,8	21	29,2	0	0
9a	In another location of the own farm	29	40,3	43	59,7	0	0
9b	In another farm	23	31,9	49	68,1	0	0
9c	In several other locations	10	13,9	62	86,1	0	0
9d	With other foreign animals	9	12,5	63	87,5	0	0
10	In-house production of basic feed	40	55,6	32	44,4	0	0
11	Purchase of basic feed	29	40,3	43	59,7	0	0
11a	From one producer	9	12,5	63	87,5	0	0
11b	From several producers	61	84,7	11	15,3	0	0
11c	Change more than once a month	3	4,2	69	95,8	0	0
11d	Change every 1- 3 months	3	4,2	69	95,8	0	0
11e	Change less than every 3 months	65	90,3	7	9,7	0	0
12	In-house and external manure as fertilizer	14	19,4	58	80,6	0	0
13	Only external manure as fertilizer	3	4,2	69	95,8	0	0
14	In-house biogas plant	48	66,7	24	33,3	0	0
14a	Use of in-house material	34	47,2	38	52,8	0	0
14b	Use of external material	12	16,7	60	83,3	0	0
14c	Less than 3 suppliers	9	12,5	63	87,5	0	0
14d	More than 3 suppliers	1	1,4	71	98,6	0	0
14e	Fixed suppliers	8	11,1	64	88,9	0	0
14f	Change less than every 3 months	3	4,2	69	95,8	0	0
14g	Manure from cattle farms	3	4,2	69	95,8	0	0
14h	Manure from pig farms	4	5,6	68	94,4	0	0
14i	Manure from horse farms	3	4,2	69	95,8	0	0

14j	Manure from poultry farms	1	1,4	71	98,6	0	0
15	Changing persons have contact to the dairy herd	72	100	0	0	0	0
15a	Persons have further animal contact	72	100	0	0	0	0
15b	Use of in-house protective clothing	1	1,4	71	98,6	0	0
16	Pest control	67	93,1	5	6,9	0	0
16a	Rodents	33	45,8	39	54,2	0	0
16b	Flies	2	2,8	70	97,2	0	0
16c	Rodents and flies	32	44,4	40	55,6	0	0
17	Cubicle housing system > 50%	72	100	0	0	0	0
18	Flat floors > 50%	38	52,8	34	47,2	0	0
19	Slatted floors > 50%	34	47,2	38	52,8	0	0
20	High cubicle beds > 50%	31	43,1	41	56,9	0	0
21	Low cubicle beds > 50%	37	51,4	35	48,6	0	0
22	50% high/ 50% low cubicle beds	2	2,8	70	97,2	0	0
23	Straw	37	51,4	35	48,6	0	0
24	Sawdust	7	9,7	65	90,3	0	0
25	Other bedding material	16	22,2	56	77,8	0	0
26	Use of lime	51	70,8	21	29,2	0	0
27	Dry teat cleaning	15	20,8	57	79,2	0	0
28	Wet teat cleaning	30	41,7	42	58,3	0	0
29	Direct milking	3	4,2	69	95,8	0	0
30	Post-teat treatment	24	33,3	48	66,7	0	0
31	Post-teat treatment with Chlorhexidin	16	22,2	56	77,8	0	0
32	Post-teat treatment with another medium	24	33,3	48	66,7	0	0
33	Dip	39	54,2	33	45,8	0	0
34	Spray	29	40,3	43	59,7	0	0
35	Milking cluster disinfection after each cow	42	58,3	30	41,7	0	0
36	Seperate milking parlor for sick cows	4	5,6	68	94,4	0	0
37	Waste milk cows milked at the end	46	63,9	25	34,7	1	1,4
38	Benestermycin	45	62,5	27	37,5	0	0
39	Orbenin	13	18,1	59	81,9	0	0
40	Other antibiotic dry therapeutica	14	19,4	58	80,6	0	0
41	Use of teat sealants	61	84,7	11	15,3	0	0
42	Dry period ≥ 42 days	64	88,9	8	11,1	0	0
43	Dry period < 42 days	7	9,7	65	90,3	0	0
44	Maternal vaccinations	46	63,9	26	36,1	0	0
44a	Rota/Corona/ <i>E. coli</i>	44	61,1	28	38,9	0	0
44b	Clostridia	5	6,9	67	93,1	0	0
45	Isolated calving on deep bedding	12	16,7	60	83,3	0	0
46	Co-calving on deep bedding	67	93,1	5	6,9	0	0

47	Co-calving in cubicle system housing	2	2,8	70	97,2	0	0
48	Co-calving on sand bedding	1	1,4	71	98,6	0	0
49	Cleaning after each birth	2	2,8	70	97,2	0	0
50	Cleaning > 1 x per week	23	31,9	49	68,1	0	0
51	Cleaning < 1 x per week	45	62,5	27	37,5	0	0
52	Calves < 1 h with dams	24	33,3	48	66,7	0	0
53	Calves 1-3 h with dams	37	51,4	35	48,6	0	0
54	Calves > 3 h with dams	11	15,3	61	84,7	0	0
55a	Co-husbandry of calving cows	59	81,9	13	18,1	0	0
55b	Co-husbandry of calving and sick cows	12	16,7	60	83,3	0	0
56	Single calf husbandry	61	84,7	11	15,3	0	0
57	Co-husbandry	4	5,6	68	94,4	0	0
58	Single and co-husbandry	7	9,7	65	90,3	0	0
59	Igloo-husbandry	44	61,1	28	38,9	0	0
60	Pen-husbandry	21	29,2	51	70,8	0	0
61	Mixed Igloo and pen husbandry	4	5,6	68	94,4	0	0
62	No change in husbandry	22	30,6	50	69,4	0	0
63	Change after 7 days	11	15,3	61	84,7	0	0
64	Change after 14 days	30	41,7	42	58,3	0	0
65	Change after 21 days	3	4,2	69	95,8	0	0
66	Concrete floor	69	95,8	3	4,2	0	0
67	Daily bedded with straw	21	29,2	51	70,8	0	0
68	Direct contact to other calves	62	86,1	10	13,9	0	0
69	Calve-feedlot Ratio >1:1	2	2,8	70	97,2	0	0
70	Further animal contact	70	97,2	2	2,8	0	0
71	All-in-all-out-principle only ♀	2	2,8	70	97,2	0	0
72	Colostrum immediately after birth	14	19,4	58	80,6	0	0
72a	Within 3 h after birth	45	62,5	27	37,5	0	0
72b	More than 3 h after birth	13	18,1	59	81,9	0	0
72c	Sucked from the own dam	2	2,8	70	97,2	0	0
72d	Milked from the own dam	43	59,7	29	40,3	0	0
72e	Stored in refrigerator	20	27,8	52	72,2	0	0
72f	Stored in freezer	11	15,3	61	84,7	0	0
72g	Pasteurized	2	2,8	70	97,2	0	0
72h	Acidified	3	4,2	69	95,8	0	0
72i	First meal ≤ 2 L	7	9,7	65	90,3	0	0
72j	First meal >2 < 4 L	32	44,4	40	55,6	0	0
72k	First meal ≥ 4 L	33	45,8	39	54,2	0	0
72l	Drench	38	52,8	34	47,2	0	0
72m	Nursing bucket	29	40,3	43	59,7	0	0
72n	Mix of drench and nursing bucket	5	6,9	67	93,1	0	0
773	Quality check colostrum	38	52,8	34	47,2	0	0

73a	Refractometer	27	37,5	44	61,1	1	1,4
73b	Colostrometer	10	13,9	61	84,7	1	1,4
74	Cows > 3 weeks <i>a.p.</i> present in farm	69	95,8	3	4,2	0	0
75	Identical feeding ♂ ♀	58	80,6	14	19,4	0	0
76	Milk pasteurized	13	18,1	59	81,9	0	0
77	Milk acidified	15	20,8	57	79,2	0	0
78	Milk pasteurized and acidified	6	8,3	66	91,7	0	0
79	2 meals / day	52	72,2	20	27,8	0	0
80	3 meals / day	9	12,5	63	87,5	0	0
81	> 3 meals / day	11	15,3	61	84,7	0	0
82	< 5 L / day	44	61,1	28	38,9	0	0
83	> 5 L / day	2	2,8	70	97,2	0	0
84	ad libitum feeding	26	36,1	46	63,9	0	0
85	Waste milk + antibiotic residues (WM)	12	16,7	60	83,3	0	0
86	Raw milk	8	11,1	64	88,9	0	0
87	Milk replacer (MR)	14	19,4	58	80,6	0	0
88	WM + MR	24	33,3	48	66,7	0	0
89	WM + Raw milk	7	9,7	65	90,3	0	0
90	WM + Raw milk + MR	5	6,9	67	93,1	0	0
91	Raw milk + MR	2	2,8	70	97,2	0	0
92	WM as part of the feeding	48	66,7	24	33,3	0	0
93	Fixed feeding time	64	88,9	8	11,1	0	0
94	Use of automatic feeder	8	11,1	64	88,9	0	0
95	Cleaning of the feeder	59	81,9	13	18,1	0	0
95a	With water	21	29,2	51	70,8	0	0
95b	With cleaning agent	19	26,4	53	73,6	0	0
95c	With disinfectant	4	5,6	68	94,4	0	0
95d	With cleaning agent + disinfectant	10	13,9	62	86,1	0	0
95e	After each meal	15	20,8	57	79,2	0	0
95f	1 x per day	21	29,2	51	70,8	0	0
95g	< 1 x per day	23	31,9	49	68,1	0	0
96	Supplementary feed	71	98,6	1	1,4	0	0
96a	Roughage before 14th day of life	28	38,9	44	61,1	0	0
96b	Concentrate before 14th day of life	43	59,7	29	40,3	0	0
96c	Roughage after 14th day of life	17	23,6	55	76,4	0	0
96d	Concentrate after 14th day of life	22	30,6	50	69,4	0	0
96e	Only female calves receive roughage and concentrate	1	1,4	71	98,6	0	0
97	Tap water for MR	23	31,9	49	68,1	0	0
98	Well water for MR	26	36,1	46	63,9	0	0
99	Free water access	61	84,7	11	15,3	0	0
99a	Tap water	27	37,5	45	62,5	0	0

99b	Well water	37	51,4	35	48,6	0	0
100	≤ 2 persons take care of the calves	36	50	36	50	0	0
101	Trained personnel	60	83,3	12	16,7	0	0
102	Untrained personnel	33	45,8	39	54,2	0	0
103	Constant personnel	65	90,3	4	5,6	3	4,2
104	Changing personnel	7	9,7	65	90,3	0	0
105	Protective clothing	15	20,8	57	79,2	0	0
106	Preventive treatment for calves	61	84,7	11	15,3	0	0
107	Treatment schedules for calves	44	61,1	27	37,5	1	1,4
108	Preventive treatment for cows	50	69,4	22	30,6	0	0
109	Treatment schedules for cows	65	90,3	7	9,7	0	0
110	Antibiotic treatment for every clinical mastitis	36	50	36	50	0	0
111	Antibiotic treatment <50% of clinical mastitis	5	6,9	67	93,1	0	0
112	Change of antibiotics only after completion of treatment	51	70,8	21	29,2	0	0
113	Change of antibiotics ≤ 3 d	21	29,2	51	70,8	0	0
114	Alternative treatment methods	21	29,2	51	70,8	0	0
115	Co-husbandry of waste milk cows and the dairy herd	16	22,2	56	77,8	0	0
116	Separate husbandry of waste milk cows	55	76,4	17	23,6	0	0
117	Use of cleaning agents	5	6,9	67	93,1	0	0
118	Dry-through	5	6,9	65	90,3	2	2,8
119	Use of disinfectant	10	13,9	62	86,1	0	0
120	Use of lime	18	25	54	75	0	0
121	Cleaning and disinfectant plan	6	8,3	66	91,7	0	0
122	Use of cleaning agents	38	52,8	34	47,2	0	0
123	Dry-through	57	79,2	13	18,1	2	2,8
124	Use of disinfectant	58	80,6	14	19,4	0	0
125	Use of lime	3	4,2	69	95,8	0	0
126	Cleaning and disinfectant plan	21	29,2	51	70,8	0	0
127	Use of cleaning agents	48	66,7	24	33,3	0	0
128	Dry-through	5	6,9	67	93,1	0	0
129	Use of disinfectant	10	13,9	62	86,1	0	0
130	Use of lime	2	2,8	70	97,2	0	0
131	Cleaning and disinfection plan	18	25	54	75	0	0
132	Daily antibiotic use on <2/100 animals	65	90,3	5	6,9	2	2,8
133	Daily antibiotic use on 2-5/100 animals	5	6,9	65	90,3	2	2,8
134	Use of beta-lactam antibiotics	72	100	0	0	0	0
135	Use of Tetracyclines	67	93,1	5	6,9	0	0
136	Use of Aminoglycosides	62	86,1	9	12,5	1	1,4

137	Use of Polypeptide antibiotics	0	0	72	100	0	0
138	Use of Macrolides	20	27,8	51	70,8	1	1,4
139	Use of Fenicols	29	40,3	42	58,3	1	1,4
140	Use of Folic acid antagonists	40	55,6	31	43,1	1	1,4
141	Use of Quinolones	40	55,6	31	43,1	1	1,4
