

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

## **Finnish cattle and pig farmers' perceptions of animal welfare inspections**

Sofia Väärikkälä-Kiilunen<sup>†</sup>, Sanna-Mari Artukka<sup>†</sup>, Laura Hänninen<sup>‡\*</sup> & Mari Nevas<sup>†</sup>

<sup>†</sup> Department of Food Hygiene and Environmental Health, Faculty of Veterinary Medicine,  
University of Helsinki, PO Box 66 (Agnes Sjöbergin katu 2), 00014 Helsingin Yliopisto, Finland

<sup>‡</sup> Department of Production Animal Medicine, Faculty of Veterinary Medicine, University of  
Helsinki, PO Box 57 (Viikintie 49), 00014 Helsingin Yliopisto, Finland

\* Research Centre for Animal Welfare, Faculty of Veterinary Medicine, University of Helsinki, PO  
Box 57, 00014 Helsingin Yliopisto, Finland

Corresponding author:

Sofia Väärikkälä-Kiilunen

Email address: sofia.vaarikkala@helsinki.fi

Fax: +358 294 157 161

Department of Food Hygiene and Environmental Health, Faculty of Veterinary Medicine,  
University of Helsinki, PO Box 66 (Agnes Sjöbergin katu 2), 00014 Helsingin Yliopisto, Finland

Running title: Farmers' perceptions of animal welfare inspections

26 **Abstract**

27 The aim of our study was to broaden the understanding of Finnish cattle and pig farmers'  
28 perceptions of the on-site animal welfare inspections carried out by official authorities in livestock  
29 farms. The study was conducted using an electronic questionnaire, aimed at 500 Finnish cattle and  
30 500 pig farmers. We received responses from 96 cattle farmers and 105 pig farmers, of which 20  
31 and 55, respectively, had undergone an animal welfare inspection.

32 We found that most of the farmers recognized the necessity of the animal welfare inspections, but  
33 also that a more negative attitude was dominant among farmers who had undergone these  
34 inspections. The inspection itself, as well as the inspector, was a more negative experience, if the  
35 farmer had not understood the reason for the inspection, was not given an opportunity to be heard,  
36 and/or if the farmer considered the inspection report unclear.

37 Our results suggest that although the farmers generally approve of inspections, their own negative  
38 experiences affect their perceptions. Inspectors should focus on proper communication and dialogue  
39 with farmers and on making the inspection report clear.

40

41 **Keywords:**

42 Animal welfare; Cattle; Farmers perceptions; Livestock farmer; On-farm inspections; Pigs

43

44 **Introduction**

45 The protection of animals kept for farming purposes in the EU is based on a specific directive  
46 (Council Directive 98/58/EC). The standards for calves and pigs are also supplemented by species-  
47 specific directives (Council Directive 2008/119/EC; Council Directive 2008/120/EC). The  
48 directives lay down the minimum standards for the protection of animals and every EU Member  
49 State (MS) is obligated to transpose these directives into national law. Furthermore, an EC  
50 Regulation (Regulation (EC) No 882/2004) stipulates that official on-farm inspections should be

51 carried out by competent authorities to verify that the minimum standards of the above-mentioned  
52 directives are complied with. According to the same regulation, these inspections should be made  
53 without prior warning, regularly, on a risk basis, and with appropriate frequency.

54 Official animal welfare control is an important part of ensuring animal welfare on farms. However,  
55 official authorities may require no more than the minimum standards laid down in legislation.  
56 Anneberg et al. (2013) have discussed the dilemma regarding whether inspectors should only focus  
57 on verifying the compliance with legislation or whether inspections should also contain a preventive  
58 aspect. A confrontation may arise if the farmer sees animal welfare differently to the inspector, who  
59 looks at the issue from a legislative perspective (Sorensen and Fraser, 2010).

60 The Finnish animal welfare control system was changed at the end of 2009 when new official  
61 veterinarian posts were created for animal welfare control. This change was due to an existing  
62 conflict of interest; the same official veterinarians who were responsible for the veterinary care of  
63 the animals also carried out inspections on the same premises, i.e. on their clients. Another aim of  
64 the change was to increase resources for animal welfare control. In Finland the animal welfare  
65 inspections are mainly based on suspicion of non-compliance but also on sampling (approximately  
66 2% of cattle and 3% of pig farms) and on the control of cross-compliances (Evira, 2016). In cases of  
67 minor non-compliance, e.g. slightly dirty drinking water, guidance on corrections and promoting  
68 animal welfare is given. If the guidance given is found to be ineffective or if the non-compliances  
69 are serious, e.g. animals are suffering from thirst, appropriate enforcement measures are taken to  
70 ensure correction. An animal owner may be given a prohibition for continuing or repeating an  
71 illegal procedure or an order to fulfil obligations within a specific time period. If required for  
72 animal protection reasons, official authorities may also take immediate action to ensure the welfare  
73 of an animal, e.g. feed or other substances may be acquired from elsewhere or animal may be  
74 euthanized. In addition, a notification may be made to the police and EU subsidies may be reduced  
75 as a consequence.

76 Although numerous on-site animal welfare inspections are carried out in Europe every year,  
77 surprisingly little research has been undertaken on how farmers perceive these inspections. Finnish  
78 farmers consider the increased control in Finnish agriculture following accession to the EU an insult  
79 to their honesty, intimacy and a violation of the sanctity of their homes (Ådahl, 2007). In the  
80 Netherlands, farmers consider the inspections of animals important not only to find the “bad apples”  
81 but also to show how well farmers are doing (Bracke et al., 2005). According to Anneberg et al.  
82 (2012), Danish farmers perceive animal welfare inspections as necessary, but also unfair and  
83 obtrusive. Furthermore, the amount of rules and regulative details make the Danish farmers feel  
84 insecure (Anneberg et al., 2012). European farmers have also criticized that some animal welfare  
85 regulations and measures are not useful and even detrimental to animals and difficult and costly to  
86 implement (Bock and van Huick, 2007). The aim of this study was to broaden the understanding of  
87 the perceptions of farmers regarding the necessity and quality of official animal welfare control.

88

## 89 **Material and methods**

### 90 *Questionnaire*

91 We developed an electronic questionnaire (E-lomake, Eduix Oy) to evaluate the farmers’  
92 perceptions of animal welfare control. This was aimed at 500 Finnish cattle and 500 pig farmers. A  
93 request for data was sent to the Finnish Food Safety Authority (Evira), and after authorization,  
94 randomized sampling of the farmers (excluding those who had less than 10 cattle or pigs, or who  
95 had no email address) was performed by the National Land Survey of Finland. We sent the  
96 questionnaire by email in August 2015. The farmers were sent a reminder twice and were given 20  
97 days to respond. No prize was offered as an incentive. The data received were analysed  
98 anonymously. The electronic questionnaire consisted of seven parts, incorporating 49 questions.  
99 Each part had one to eleven questions, which were mainly of the closed type; respondents were  
100 asked to choose from a list of given options or state their opinion on given statements on a five-

101 point Likert scale (1 = fully disagree to 5 = fully agree). In the open-ended questions, the  
102 respondents could express their opinions regarding issues related to animal welfare control or  
103 clarify the answers they had given in the closed questions. The first part comprised questions about  
104 the background of the respondents and their farms. The second part asked the respondents to define  
105 the term animal welfare. The third part asked questions about the respondents' knowledge of the  
106 requirements of national animal welfare legislation. In the open-ended questions, respondents could  
107 express how and what information they would need more of, and whether they would change  
108 anything in the current animal welfare legislation. Part four comprised general questions related to  
109 the number and importance of animal welfare inspections and the change of the Finnish animal  
110 welfare control system. The fifth part was directed only to the respondents who had undergone an  
111 animal welfare inspection after 2009, and included questions about the inspection itself and their  
112 experiences. In the sixth part, the respondents were asked to express their opinions regarding the  
113 enforcement measures and punishments, and in the last part the respondents could give additional  
114 comments on animal welfare control and on the questionnaire itself (Appendix 1). Part two and six  
115 were not analysed in this survey.

### 116 *Statistical analysis*

117 Before the data analysis, we grouped the respondents on the basis of their age, gender and work  
118 experience, the number and type of animals on their farms, and whether they had undergone an  
119 inspection after 2009. The independent samples t-test (two groups) and the ANOVA (more than two  
120 groups) were used to evaluate the differences between the datasets. We used the Kolmogorov-  
121 Smirnov test to determine the distribution of data and Levene's test to determine the homogeneity  
122 of variances. Based on the Levene's test we used post-hoc Tamhane's (variances not equal) or  
123 Tukey's test (variances equal). In case the number of responses were low (less than 100) and data  
124 was not equally distributed we used the Mann-Whitney U-test (two groups) and the Kruskal-Wallis

125 T-test (more than two groups) to evaluate the differences between the datasets. The relationships  
126 between different variables were evaluated using Spearman's correlation.

127 We created the sum variables of positive attitude towards the inspector and the inspection using  
128 five-point Likert-scale statements about the inspector and the inspection itself (1 = fully disagree, 2  
129 = somewhat disagree, 3 = neither disagree nor agree, 4 = somewhat agree, 5 = fully agree, Table 1).  
130 Cronbach's Alpha was used to examine the average correlation of selected statements and thus, the  
131 reliability of the created sum variables. In addition, we analysed some of the open questions through  
132 content analysis (O'Cathain and Thomas, 2004). We grouped the answers and distinguished  
133 common themes. The answers were coded and the codes treated as variables in a quantitative  
134 analysis. Although two authors conducted the data analysis, all the authors discussed the  
135 interpretation together and consensus was achieved.

136 We analysed the data using SPSS statistical software (IBM SPSS Statistics 22.0, NY, USA). The  
137 'Don't know' answers were categorized as 'missing', and ambiguous answers in open-ended  
138 questions that could not be interpreted were excluded from the analysis. Statistical significance was  
139 accepted at a confidence level of 95% ( $P < 0.05$ ).

140

## 141 **Results**

### 142 ***Background of respondents***

143 Of the 500 cattle farmers and 500 pig farmers, 96 (19%) and 105 (21%) responded to the  
144 questionnaire (Table 2). The median age of the respondents was 48 years (range 21-65 years) and  
145 the median work experience 21 years (range 0-62 years). The geographical distribution of the  
146 respondents corresponded quite well with the overall distribution of the farms in Finland (Official  
147 Statistics of Finland, 2017a).

148 Of the cattle farmers, 21% (20/96) and of the pig farmers, 52% (55/105) had undergone at least one  
149 animal welfare inspection after 2009. Thirty-six per cent (27/75) of the farmers had undergone a

150 sampling-based inspection, whereas the percentages for inspections based on suspicion of non-  
151 compliance and on control of cross-compliances were 27% (20/75) and 12% (9/75). Twenty-five  
152 per cent (19/75) of the farmers did not clarify the reason for the inspection.

### 153 *Necessity of animal welfare inspections*

154 The animal welfare inspections were considered necessary by 72% (142/198), neither necessary nor  
155 unnecessary by 14% (27/198) and unnecessary by 15% (29/198) of the respondents. Of the  
156 respondents, a total of 133 had clarified their response and more than half of them (71/133) justified  
157 inspections with the need to find those who neglect animals or violate animal welfare laws. Of the  
158 68 respondents who had undergone an inspection, 42 (62%) evaluated the inspection of their own  
159 farm as unnecessary, and 31% (22/70) considered that they had not benefited from the inspection.  
160 Only 13% (9/70) of the respondents considered that the inspection promoted the welfare of animals  
161 in their own farms.

162 More than 90% (175/193) of the respondents considered the current animal welfare control in  
163 Finland sufficient. The change of the Finnish control system had been noticed by 49% (98/201) of  
164 the respondents. Of those 98 respondents who had noticed the change, 41 (42%) considered it  
165 necessary, 15 (15%) neither necessary nor unnecessary, and 33 (34%) unnecessary. We found a  
166 weak negative relationship between the opinions regarding the sufficiency of animal welfare control  
167 and the necessity of inspections (Spearman rank  $r = 0.29$ ,  $P < 0.001$ ). Instead, a stronger positive  
168 relationship existed between the opinions regarding the necessity of inspections and the necessity of  
169 the change (Spearman rank  $r = 0.51$ ,  $P < 0.001$ ).

170 There were statistically significant differences between genders, animal species and whether the  
171 farm had been inspected or not in the attitudes towards the necessity of inspections, the sufficiency  
172 of animal welfare control and the necessity of the change of the Finnish animal welfare control  
173 system (Table 3). The farmers who had undergone an inspection considered the inspections and the  
174 change more often unnecessary. Also the male respondents and pig farmers more often considered

175 both the inspections and the changes unnecessary than the female respondents and cattle farmers.  
176 However, there was no significant difference between the age groups, or the groups based on  
177 working experience.

### 178 *Effect of communication*

179 We used the created sum variables for the statements concerning the inspector (N of variables = 5,  
180 Cronbach's Alpha = 0.96) and the inspection situation (N of variables = 8, Cronbach's Alpha = 0.96)  
181 to examine the correlations between different variables related to inspection procedures. Proper  
182 communication and dialogue between the farmer and the inspector during the inspection proved to  
183 be an important factor affecting the farmers' attitude towards both the inspector and the inspection  
184 situation (Table 4).

185 Almost two thirds (49/74; 66%) agreed that communication with the inspector was easy, and 80%  
186 (60/75) agreed that the inspection was carried out in mutual understanding. Respondents who felt  
187 that communication with the inspector was easy also more often felt that the inspection was made in  
188 mutual understanding, and that the inspection increased their knowledge of animal husbandry  
189 (Spearman rank  $r = 0.72$  and  $r = 0.42$ , respectively,  $P < 0.01$  for both). If the respondents felt that  
190 their knowledge of animal husbandry increased, they also perceived the inspection as useful  
191 (Spearman rank  $r = 0.62$ ,  $P < 0.001$ ). Moreover, most of the respondents (53/74; 72%) felt that they  
192 had been heard during the inspection and this correlated positively with the experience of easy  
193 communication with the inspector (Spearman rank  $r = 0.74$ ,  $P < 0.001$ ). The females more often  
194 agreed that communication was easy and that the inspection was made in mutual understanding than  
195 the male respondents (83% vs. 61% and 89% vs. 77%, respectively, Mann-Whitney U-test,  $P < 0.05$   
196 for both).

197 The reason for the inspection, the inspection report and/or the process of appealing against the  
198 activity of the public authority were unclear for 14% (10/72), 21% (15/70) and 37% (26/70) of the



199 respondents. These respondents also more often considered that the inspection violated their legal  
200 protection (Spearman rank  $r = 0.28$ ,  $r = 0.33$  and  $r = 0.28$ ,  $P < 0.05$  for all).

201 About a half (37/73; 51%) of the inspections were performed without prior warning and the other  
202 half (36/73; 49%) were agreed on beforehand. If the inspection was performed without prior  
203 warning, the respondents more often felt that it disturbed the routines of the farm (63% vs. 40%),  
204 and violated their legal protection (44% vs. 9%) (Mann-Whitney U-test,  $P < 0.05$  for both). In the  
205 case of inspections agreed on beforehand, the respondents more often considered that it took place  
206 in mutual understanding (89% vs. 70%) and that the atmosphere was more open (81% vs. 58%) (  
207 Mann-Whitney U-test,  $P < 0.05$  for both).

### 208 ***Outcome of inspection***

209 According to the farmers, most farms (83%; 62/75) complied with the animal welfare standards or  
210 had only minor non-compliances and enforcement measures were used in only 17% (13/75) of the  
211 inspected farms responding to the questionnaire. Only in 52% (8/13) of the cases had a new  
212 inspection been made after the use of enforcement measures.

213 We found that there was a statistical relationship between the outcome of the inspection  
214 (enforcement measures vs. guidance vs. no measures) and the respondents' perceptions of the  
215 inspection visit (Figure 1). The relation was significant for four statements: The atmosphere was  
216 tense during the inspection (62% vs. 40% vs. 32%, Kruskal-Wallis T-test,  $P = 0.042$ ), The  
217 inspectors' observations were appropriate (15% vs. 36% vs. 59%,  $P = 0.003$ ), The inspector acted  
218 professionally (46% vs. 64% vs. 80%,  $P = 0.016$ ) and Communication with the inspector was easy  
219 (31% vs. 82% vs. 72%,  $P = 0.020$ ) (Figure 1).

### 220 ***Sufficiency and sources of information regarding legal standards of animal welfare***

221 Of the respondents, 81% (161/199) considered that they were sufficiently familiar with the  
222 standards of animal welfare legislation. There was no significant difference regarding this opinion  
223 between genders, the age groups, or groups based on working experience. Of those 38 respondents

224 who considered that they were not sufficiently familiar with the legislation, 32 (84%) explained  
225 their response with the difficulty in interpreting legislation. If the farmers considered that they were  
226 not sufficiently familiar with the standards, they also viewed the inspector more negatively  
227 (Spearman rank  $r = 0.24$ ,  $P = 0.039$ ).

228 The 95 responses to the open-ended question ‘Is there something you would like to add, change or  
229 remove in the current animal welfare legislation?’ could be divided into three main themes: 1) the  
230 option of using common sense instead of measuring millimetres during inspections (32%; 31/95), 2)  
231 the legislation should be drawn up by people with practical experience (16%; 15/95) and 3) national  
232 standards should be in line with those of other EU Member States (8%; 8/95).

233 The degree of information concerning legal standards was considered sufficient by 66% (127/193)  
234 of the respondents, and insufficient by 25% (48/193). The amount of information was more often  
235 considered insufficient by cattle farmers and those who had not undergone an animal welfare  
236 inspection (t-test,  $P < 0.05$  for both) and also young respondents compared to old ones (Tamhane’s  
237 test,  $P = 0.008$ ). We found a correlation with the respondents’ opinions regarding the sufficiency of  
238 information and their knowledge (Spearman rank  $r = 0.45$ ,  $P < 0.001$ ). The most important sources  
239 of legal standards were the farms’ own veterinarians and professional magazines. Slaughterhouses  
240 and dairies also had an important role (Figure 2).

241

## 242 **Discussion**

243 In this study we evaluated livestock farmers’ perceptions of the necessity and quality of official  
244 animal welfare control in Finland. We showed here that the farmers’ own experiences of animal  
245 welfare inspections made their perception of inspections more negative. There was a statistically  
246 significant relationship between the outcome of the inspection and respondents’ perceptions on the  
247 inspection visit. Observed negative perceptions might be due to a more serious offence against  
248 animal welfare in these farms, thus having impaired the atmosphere during the inspection visit.

249 However, the farmers perceived animal welfare inspections as better if proper communication and  
250 dialogue with inspector was achieved during the inspection. If the farmers experienced that  
251 communication with the inspector was difficult or that they were not given an opportunity to be  
252 heard, both the inspection and the inspector were perceived more negatively. It might be that those  
253 farmers who were angry enough bother to answer the questionnaire but still investing in inspectors'  
254 communication skills, through training, for example, may enhance collaboration with farmers, also  
255 with the challenging ones.

256 If the farmers experience inspections as an unwanted penetration into their territory, this might  
257 hinder any fruitful discussions and co-operation. Also Anneberg et al. (2012) recognised that the  
258 dialogue between inspectors and farmers has an important influence on the outcome of the  
259 inspection. In addition, officials' good cooperation skills and a negotiative approach have been  
260 highlighted in food control (Läikkö-Roto and Nevas, 2014; Kettunen et al., 2017). We found that  
261 female farmers had a more welcoming attitude towards the inspection than the male farmers:  
262 females may possibly have more animal-centred thoughts (Maria, 2006) or better social skills than  
263 men. Furthermore, in Finland most of the inspectors are females, which could also have an impact  
264 on the attitudes and this should be studied further. In addition, it would be of interest to evaluate  
265 how the inspectors perceive the inspections. We also found that the cattle farmers' perception of  
266 inspections was more positive than that of pig farmers. Bock et al. (2007) argued in their study  
267 concerning French, Swedish and Dutch farmers that cattle farmers may also possibly feel closer to  
268 their animals compared to pig farmers. Another reason influencing this difference might be a  
269 termination of a long period of transition concerning a tightened legislation on pig welfare,  
270 demanding e.g. group housing of sows and gilts.

271 It was worrying that almost one third of the participating Finnish farmers considered that the  
272 inspection carried out on their farm violated their legal protection. Although the purpose of an  
273 inspection is to ensure that animal welfare requirements are met, the farmers appeared to consider

274 them an attack against the business and property to which they are entitled. Lepistö and Hänninen  
275 (2011) argued that the obligation of public authorities to use administrative enforcement measures  
276 that conflict with basic rights such as freedom to conduct a business creates a strong contradiction.  
277 We found four main reasons for the farmers seeing the inspection as a violation of their legal  
278 protection: they did not understand the reason of the inspection, the appeal process and/or the  
279 inspection report were unclear, and the inspection was performed without prior warning. With the  
280 exception of prior warning, these reasons could easily be influenced by the proper communication  
281 and dialogue and writing skills of the inspector.

282 We found that about half of the inspections were agreed on beforehand, despite the demand for  
283 performing animal welfare inspections without prior warning deriving from EC Regulation No  
284 882/2004. It is not surprising that the farmers experienced an inspection more negatively if it was  
285 carried out without prior warning, as in Finland, most farms are family farms (Official Statistics of  
286 Finland, 2017b), and the inspections might be considered an infringement of the inviolability of the  
287 home. It should be discussed whether the efficacy of the control might improve if inspections were  
288 announced beforehand, as this way the farmers would react more positively and hence be more  
289 receptive. A better dialogue between the farmer and the inspector could be achieved. According to  
290 Hitchens et al. (2017), one of the ways of finding poor animal welfare is the owner not being  
291 notified of an inspection beforehand, i.e., more non-compliance is detected when owners are not  
292 expecting an inspection. More research on the advantages and disadvantages of prior warning is  
293 needed to evaluate the utility of the demand for performing inspections without prior warning.

294 We also noticed that if the reason for the inspection remained unclear, the farmers not only felt that  
295 their legal protection was violated, but they also felt more negatively about the inspection. Farmers  
296 may be confused, as farms are inspected for different reasons, not only for animal welfare but also  
297 for registration and marking, food hygiene and use of fields. Also in our study it was seen that the  
298 farmers had difficulties in distinguishing animal welfare inspections from other types of official

299 inspections. However, based on the responses to open-ended questions, the farmers who had  
300 undergone an animal welfare inspection could be identified and thus the interpretation of the results  
301 was not compromised. In addition, the non-compliances detected on some of the inspections may  
302 lead to a reduction of EU subsidies, although not all lead to this. Anneberg et al. (2013) stated that  
303 farmers' understanding of inspections would result in a more positive attitude towards them. We  
304 thus conclude that it is crucial that the reason and the content of the inspection are clearly  
305 communicated to the farmer.

306 We also found that almost half of the farmers did not know how to appeal about the activities of  
307 authorities. In addition, in some cases the inspection report was considered unclear. When official  
308 power is used, the right to appeal should be highlighted, as it is a fundamental right and ensures that  
309 the object of supervision has an opportunity to a fair trial (Administrative Procedure Act 2003). The  
310 administrative process of animal welfare control should guarantee the legal protection of the  
311 farmers. In her research on the Finnish animal welfare control system from 1996 to 2006, Wahlberg  
312 (2010) argued that the official authorities carrying out the inspections were not adequately  
313 acquainted with the administrative process, as the owner was officially heard in only 8% of animal  
314 welfare inspections, and this is a legal requirement in Finland (Administrative Procedure Act 2003).  
315 One of the aims of changing the Finnish control system was to improve the use of administrative  
316 measures, and this shows that although there is still scope for improvements in the hearing process,  
317 clear progress has been made since 2006, as now almost half of the farmers who did not comply  
318 with the legislation felt that they had been heard.

319 A repeat inspection was carried out in our material in only half of the cases in which enforcement  
320 measures were taken, even though this should be done routinely. Kettunen et al. (2015) found in a  
321 study related to food control that although the use of enforcement measures led to compliance in  
322 most of the violations, verifying compliance after the enforcement decision was essential. The

323 importance of ensuring the correction of the violations using re-inspection or another documented  
324 way should also be emphasized in animal welfare control.

325 We found it somewhat controversial that although the Finnish farmers had a somewhat negative  
326 attitude towards exact standards (e.g. measuring millimetres) and would have preferred more  
327 practical approaches, the main reason for their hesitation remained difficulties in interpreting the  
328 law due to its abstract expressions. Anneberg et al. (2012) also found that interpretation of the law  
329 created uncertainty among Danish farmers, since it is subjective, meaning that farmers might be  
330 treated differently. The Finnish Animal Welfare Act (1996) contains many expressions, such as  
331 premises must have *sufficient* space; the animal must obtain *suitable* feed; and when an animal falls  
332 ill, it must obtain *appropriate* care, which are open to various interpretations. These expressions  
333 permit flexibility in animal welfare standards and make it possible to evaluate the conditions based  
334 on animal welfare rather than precise, measurable engineering standards. The interpretations may  
335 vary depending on the inspector and this might lead to unequal treatment of farmers. Therefore,  
336 central organization is essential for providing proper guidance on the sections of legislation that are  
337 open to various interpretations, and also for educating the official authorities. Effective guidance  
338 and juridical aid from the central administration are important for ensuring good governance and the  
339 adequate use of enforcement measures (Lepistö and Hänninen, 2011).

340 It was not surprising that veterinarians were the most important sources of information, since  
341 Finland has comprehensive veterinary organization delivering both clinical and prophylactic service  
342 for food animals. More than half of the Finnish cattle farms and most of the Finnish pig farms  
343 belong to the system; in cattle farms the herd health veterinarian makes a minimum of one annual  
344 health care visit and in pig farms at least three to four annual visits. Both farm types have a herd  
345 health plan drawn up in collaboration with a veterinarian (ETT, 2017). We found that if the farmer  
346 considered their knowledge insufficient, they perceived the inspection situation more negatively.  
347 Thus, we suggest that educating both the veterinarians, who take care of the farms, and the farmers

348 in legislation may result in better attitudes towards inspections. This is in line with the previous  
349 recommendations on intensifying the effect of food control through guidance on legislation (Nevas  
350 et al., 2013; Lääkkö-Roto and Nevas, 2014). The low return rate of the questionnaire (20%)  
351 questions whether the responses were representative of all Finnish farmers. The geographical and  
352 age distribution of the respondents represented well the Finnish population of farmers so that we  
353 assume our sample was representative. Therefore, we did not add a follow-up study to investigate  
354 the reasons for not responding. In addition, several of our results are in accordance with previous  
355 studies: Finnish farmers have recognised that inspections are an important way to find those who do  
356 not follow the standards, which was also the case with Dutch and Danish farmers (Bracke et al.,  
357 2005; Anneberg et al., 2012). Bock and van Huick (2007) also reported that the farmers experience  
358 the imbalance between national legislation and legislation elsewhere unfair and our study supported  
359 these results. Finally, our study confirmed that it is important to involve farmers in developing the  
360 process of inspections as they may reveal issues that can be fixed. We show here that a high  
361 proportion of the responding Finnish cattle and pig farmers recognized the necessity of animal  
362 welfare inspections, but a farmer's own negative experience of animal welfare inspection could  
363 make their perception of the usefulness of inspections more negative.

364

### 365 **Animal welfare implications and conclusion**

366 We argue that a more positive perception of animal welfare inspections could be achieved by  
367 investing in a trusting and professional atmosphere for the inspection, with proper client  
368 communication and dialogue and clear delivery of the reasoning of the outcomes. In addition, the  
369 better atmosphere may reduce confrontations between farmers and inspectors, and thus lead to  
370 better collaboration and improvements in animal welfare. Finally, as the administrative process in  
371 animal welfare control seemed to be somewhat unclear to Finnish farmers, it would be important to

372 educate them in the content of the process, and to educate the inspectors in how to use the process  
373 in a way that ensures the legal protection of the farmers.

374

## 375 **References**

376 **Ådahl S** 2007 Good lives, hidden miseries, an ethnography of uncertainty in a Finnish village.  
377 Research Reports no. 250. Department of Sociology, Helsinki University. Helsinki: Helsinki  
378 University Printing Press

379 **Administrative Procedure Act** 2003 Administrative Procedure Act 434/2003.  
380 <http://www.finlex.fi/en/laki/kaannokset/2003/en20030434.pdf> (accessed 8.8.2017)

381 **Animal Welfare Act** 1996 Animal Welfare Act 247/1996.  
382 <http://www.finlex.fi/fi/laki/kaannokset/1996/en19960247.pdf> (accessed 26.02.2017)

383 **Anneberg I, Vaarst M and Sandøe P** 2013 To inspect, to motivate - Or to do both? A dilemma for  
384 on-farm inspection of animal welfare. *Animal Welfare* 22: 185-194

385 **Anneberg I, Vaarst M and Sørensen JT** 2012 The experience of animal welfare inspections as  
386 perceived by Danish livestock farmers: A qualitative research approach. *Livestock Science* 147: 49-  
387 58

388 **Bracke MBM, de Greef KH and Hopster H** 2005 Qualitative stakeholder analysis for the  
389 development of sustainable monitoring systems for farm animal welfare. *Journal of Agricultural*  
390 *and Environmental Ethics* 18: 27-56

391 **Bock BB and van Huick MM** 2007 Animal welfare: the attitudes and behaviour of European pig  
392 farmers. *British Food Journal* 109: 931-944

393 **Bock BB, Van Huik MM, Prutzer M, Kling Eveillard F and Dockes A** 2007 Farmers'  
394 relationship with different animals: the importance of getting close to the animals. Case studies of  
395 French, Swedish and Dutch cattle, pig and poultry farmers. *International Journal of Sociology of*  
396 *Food and Agriculture* 15: 108-125



397 **Council Directive 98/58/EC** Council Directive 98/58/EC concerning the protection of animals kept  
398 for farming purposes. *Official Journal of the European Communities* 221: 23-27

399 **Council Directive 2008/119/EC** Council Directive 2008/119/EC laying down minimum standards  
400 for the protection of calves. *Official Journal of the European Union* 10: 7-13

401 **Council Directive 2008/120/EC** Council Directive 2008/120/EC laying down minimum standards  
402 for the protection of pigs. *Official Journal of the European Union* 47: 5-13

403 **ETT 2017 Animal Health ETT** <https://www.ett.fi/sisalto/ett-english> (accessed 26.02.2017)

404 **Evira** 2016 Eläinten hyvinvoinnin valvonta 2015 [https://www.evira.fi/globalassets/tietoa-](https://www.evira.fi/globalassets/tietoa-evirasta/esittely/toiminta/valvonta/2015/elainten-hyvinvoinnin-valvonta-2015.pdf)  
405 [evirasta/esittely/toiminta/valvonta/2015/elainten-hyvinvoinnin-valvonta-2015.pdf](https://www.evira.fi/globalassets/tietoa-evirasta/esittely/toiminta/valvonta/2015/elainten-hyvinvoinnin-valvonta-2015.pdf) (accessed  
406 24.02.2017)

407 **Hitchens PL, Hultgren J, Frössling J, Emanuelson U and Keeling LJ** 2017 An epidemiological  
408 analysis of equine welfare data from regulatory inspections by the official competent authorities.  
409 *Animal* 11:1237-1248

410 **Kettunen K, Lundén J, Läikkö-Roto T and Nevas M** 2017 Towards more consistent and  
411 effective food control: learning from the views of food business operators. *International Journal of*  
412 *Environmental Health Research* 27: 215-229

413 **Kettunen K, Nevas M and Lunden J** 2015 Effectiveness of enforcement measures in local food  
414 control in Finland. *Food Control* 56: 41-46

415 **Lepistö O and Hänninen M-L** 2011 Effects of legal aspects on the use of compulsory procedures  
416 in environmental health and food control. *International Journal of Environmental Health Research*  
417 *11*: 127-134

418 **Läikkö-Roto T and Nevas M** 2014 Restaurant business operators' knowledge of food hygiene and  
419 their attitudes toward official food control affect the hygiene in their restaurants. *Food Control* 43:  
420 65-73

421 **María GA** 2006 Public perception of farm animal welfare in Spain. *Livestock Science* 103: 250-256

422 **Nevas M, Kalenius S and Lundén J** 2013 Significance of official food control in food safety:  
423 Food business operators' perceptions. *Food Control* 31: 59-64

424 **O'Cathain A and Thomas KJ** 2004 'Any other comments?' Open questions on questionnaires – a  
425 bane or a bonus to research? *BMC Medical Research Methodology* 4: 25

426 **Official Statistics of Finland** 2017a Number of cattle and pigs 1 December 2015. Helsinki: Natural  
427 Resources Institute Finland. [http://stat.luke.fi/en/number-cattle-and-pigs-1-december-2015\\_en](http://stat.luke.fi/en/number-cattle-and-pigs-1-december-2015_en)  
428 (accessed 26.02.17)

429 **Official Statistics of Finland** 2017b Structure of agricultural and horticultural enterprises.  
430 Helsinki: Natural Resources Institute Finland. [http://stat.luke.fi/en/structure-of-agricultural-and-](http://stat.luke.fi/en/structure-of-agricultural-and-horticultural-enterprises)  
431 horticultural-enterprises (accessed 26.02.17)

432 **Sorensen JT and Fraser D** 2010 On-farm welfare assessment for regulatory purposes: issues and  
433 possible solutions. *Livestock Science* 131: 1–7

434 **Regulation (EC) No 882/2004** Regulation (EC) No 882/2004 of the European Parliament and of  
435 the Council on official controls performed to ensure the verification of compliance with feed and  
436 food law, animal health and animal welfare rules. *Official Journal of the European Union* 165: 1-  
437 141

438 **Wahlberg B** 2010 Djurskyddsövervakningen i Finland åren 1996-2006 gällande produktions- och  
439 slaktdjur. *Juridiska Föreningen i Finland* 4: 351-404