



HAL
open science

Animal welfare official inspections: farmers and inspectors shared concerns

Isabelle Veissier, M. Miele, Luc Mounier

► **To cite this version:**

Isabelle Veissier, M. Miele, Luc Mounier. Animal welfare official inspections: farmers and inspectors shared concerns. *Animal*, 2021, 15 (1), pp.100038. 10.1016/j.animal.2020.100038 . hal-03135519

HAL Id: hal-03135519

<https://hal.inrae.fr/hal-03135519>

Submitted on 9 Feb 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NoDerivatives 4.0 International License



Animal welfare official inspections: farmers and inspectors shared concerns



I. Veissier^{a,*}, M. Miele^b, L. Mounier^a

^a Université Clermont Auvergne, INRAE, VetAgro-Sup, UMR Herbivores, 63122 Saint-Genès-Champanelle, France

^b School of Geography and Planning, Cardiff University, UK

ARTICLE INFO

Article history:

Received 3 April 2020

Received in revised form 12 June 2020

Accepted 18 June 2020

Available online 09 December 2020

Keywords:

Animal protection;

Inspection method;

Legislation;

Official controls;

Perceptions

ABSTRACT

Official inspections to check the compliance of farms with European legislation to protect farm animals are often perceived negatively by farmers. In addition, the inspections have a limited effect on improving farm compliance. We looked at the perceptions of both farmers and their inspectors about animal welfare and the inspections in a case study of dairy production in France. The identification of gaps and commonalities between both parties should help us to propose improvements in the inspection method by which inspections could more likely encourage compliance with animal welfare legislation. To achieve this aim, we conducted semi-structured interviews with 22 dairy farmers and their 19 inspectors. Both farmers and inspectors described animal welfare in terms of the state of the animal and of the living conditions and care provided to them. The majority of farmers found that the official checklist used by the inspectors is inappropriate to assess the welfare of their animals; inspectors themselves reported that they often use their own criteria and indicators (often based on the observation of animals) in addition to the official checklist. Both groups disagreed with some requirements of the legislation. These findings suggest that the content and background of the legislation to protect animals should be made clearer to both farmers and inspectors and that these two groups of actors should be involved in the definition of key points to be checked on farms, with special attention to animal-based indicators. All this could improve farmers' engagement with the results of the inspections and, hopefully, could lead to better compliance with legislation and improvements in animal welfare on farms.

© 2020 Published by Elsevier Inc. on behalf of The Animal Consortium. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Implications

To improve the effectiveness of official inspections for checking the compliance of farms with European Union legislation to protect animals, the content and background of that legislation should be made clear to both farmers and inspectors. Farmers and inspectors should also be involved in the definition of key points to be checked on farms, with special attention to the observation of animals. These points should be taken into consideration when animal welfare legislation is developed and protocols for farm inspections are planned.

Introduction

According to the cross-compliance system in place in the European Union (EU), farms must be inspected on several grounds regarding the Common Agricultural Policy (see for instance https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/income-support/cross-compliance_en), including animal welfare

(Kuhn et al., 2008). If a farm in receipt of EU subsidies does not comply with EU legislation on animal welfare, its subsidies are likely to be reduced. To protect animals on farms, the legislative acts are directives, whereby EU countries must achieve certain results while being free to decide how to do so. A directive can give general rules that apply to all species (Council Directive 98/58/EC) or be specific to a production (calves, broilers, laying hens, pigs). The compliance with the legislation improves slowly in the absence of a specific directive, such as for adult cattle. For instance, in France, only cattle farms that are inspected (a small percentage of the population each year) improve – as seen by their better results during a second inspection – while no improvement is observed across years among cattle farms newly inspected; still most of the farms inspected do not improve (only 23% chances of improvement in a farm that is re-inspected (Lomellini-Dereclenne et al., 2017)).

Most of the EU legislation to protect animals is based on minimal requirements about the conditions in which animals live (or are transported or killed). For instance, the Council Directive 98/58/EC (European Commission, 1998), that applies to animals bred or kept for farming purposes whatever their species (actually only vertebrates), includes requirements on the freedom of movement, the inspection of animals by stock people, the care of ill and injured animals, the quality

* Corresponding author.

E-mail address: isabelle.veissier@inrae.fr (I. Veissier).

of lighting and of the air in barns, the ambient temperature, the functioning of automated and mechanical equipment, feeding and watering, breeding and breeding procedures and the competence of the staff. There are more specific directives for some animal types. For instance, Council Directive 2008/119/EC (European Council, 2009) laid down minimum requirements for calves under 6 months of age, e.g. calves should not be in individual crates after 8 weeks of age, and the minimal space allowance is specified according to the calves' weight. All these requirements aim at assuring minimum resources and conditions for animals in order to prevent animal suffering and to address public concerns (Miele and Bock, 2007). It is implicitly assumed that a good level of welfare is achieved if minimal requirements are respected. Official inspections of farms in EU member states are then based on the checking of these conditions (eg Agence fédérale belge pour la sécurité de la chaîne alimentaire, 2015; Ministère français de l'agriculture, 2015).

Although there is plenty of evidence in current literature that EU farmers consider inspections necessary to comply with the law, many of them complain about the 'increased bureaucracy' associated with the animal welfare regulation and inspections (Roe et al., 2011; Kirchner et al., 2014; Escobar and Demeritt, 2017). The apparent disparity between the views of farmers and the inspection services may be barriers to motivate farmers to improve the living conditions of animals. By contrast, a common understanding between farmers and inspectors of animal welfare, the legislation and the control system and a good dialogue between these parties should encourage animal welfare improvements (Anneberg et al., 2013).

More precisely, farmers criticize the very methods used to inspect their farms on several grounds:

- Animal welfare is described by most farmers as instrumental for good production and as an integral part of their identity and practice, as 'the common sense' of good farming. According to this view, the identification of welfare problems should be straightforward to farmers and does not require precise measurements of the environment/housing where the animals live (Anneberg et al., 2012);
- The methods used to inspect seem decoupled from the purpose. The values associated with the implementation of regulations concerning the welfare of animals (that animals are treated properly) do not seem in line with the method for inspection. In other words, the indicators used for inspections are considered unsuitable to detect in a sensitive and specific manner the animal's welfare problems on farms.

As a consequence, some farmers complain that inspectors focus 'more on the process than on the animals themselves': ticking boxes to indicate the provision of a particular resource becomes an end in itself, missing the overall purpose of the inspection (Escobar and Demeritt, 2017).

Lomellini-Dereclenne et al. (2017) pointed out that French inspectors apparently do not strictly follow the guidelines provided by the Ministry of Agriculture to check the compliance of farms. It seems that inspectors themselves question the method they are supposed to use for inspecting farms on animal welfare grounds.

The present study aimed at gaining a deeper understanding about the contested issues regarding the current inspection system for the protection of farm animals. More specifically, we investigated whether the criticisms about the actual inspections come from the legislative requirements or the method used for inspection that may each be perceived as inappropriate. We also investigated the perception of animal welfare to explore what could be seen as appropriate indicators of welfare. We studied the perceptions of a group of dairy farmers – whose farms had been subject to an inspection in the last years – and their inspectors about animal welfare and the official inspections to protect animals on farms. The identification of gaps and commonalities between farmers and inspectors should allow us to propose improvements

to the inspection method by which inspections could more likely encourage farm compliance with legislation and thereby welfare improvements.

Material and methods

Type of inspections

We carried out a study in France within the framework of cross-compliance with the Common Agricultural Policy according to which at least 1% of the farms are to be inspected by official veterinary services, that is at least 2200 farms among the 220 000 French livestock farms (according to the statistics produced by the Ministry for agriculture, <https://agreste.agriculture.gouv.fr/agreste-web/>). Before these inspections, the farmers receive a notification by phone at least 2 days before the visit. The farm visit is carried out by two inspectors at a time. The inspectors look at the farm and at documents (e.g. farm records) and check if actions were undertaken in any cases where non-compliances had been observed during a previous visit. At the end of the visit, the inspectors summarise orally the results obtained for the various items of the checklist to the farmers. After the visit, the inspectors write a full report, containing both negative (non-compliant items) and positive results. The report is checked by the head of the animal health and welfare department from the regional services of the Ministry of Agriculture, and then it is sent to the farmer.

We targeted farms with dairy cows and calves because they receive subsidies from the EU and are thus concerned about cross-compliance. Moreover, there is no specific directive for cattle (except for calves under 6 months) so this opens possibilities for divergent interpretations on how compliance should be checked. The central administration of the French Ministry of Agriculture elaborated a checklist to be used by field inspectors (Ministère français de l'agriculture, 2015). This list includes the following items: (See Table 1.)

- Accommodation (protection against adverse conditions and quality of enclosures when animals are outdoors; quality of building materials, flooring and ambience when they are indoors);
- Equipment (feeding, watering and ventilation devices not harmful, appropriate and functioning well);
- Staff (qualification, knowledge, number);
- Management (inspection of animals, no painful practices, isolation and treatment of ill animals);
- Resources (quantity and quality of feeding and watering);
- Farm records.

Interviewees

Out of the database from the French Ministry of Agriculture that contains all inspection reports, we selected 22 dairy farmers located in an area of 150 km around Lyon (France) and that had been inspected at least once between 2009 and 2013. The farmers were randomly selected from this population because we had no pre-conceived hypotheses of the factors that would influence their perceptions. Once we selected the farmers, we checked that we obtained a range of elements that are usually taken into account in farm surveys such as farmer gender (17 men and 5 women), age (from 25 to 59 years old) and size of herds (from 12 to 350 dairy cows) (Table 2). All farms were run by the family or in partnership. Only one farm was certified organic. Some farmers had another professional experience before becoming farmers, and one farmer had another part-time job.

We identified the 19 inspectors (13 men and 6 women) who conducted the inspections of the 22 selected farms (Table 3). They were technicians from veterinary official services or veterinary inspectors. Six of them had a background in agriculture. They had from 1 to 30 years of experience.

Table 1
Checklist used by French inspectors for cattle farms.

Area	Item
Accommodation	Protection against adverse weather and predators when outdoors
	Outside enclosures clear of harmful objects such as metal or plastic scraps or disused machines
	Outside enclosures well delimited
	Building materials not harmful to animals
	Equipment and building materials easy to clean and disinfect
	No sharp edges likely to harm animals
	Floors allowing waste disposal
	Quality of ambient air (gases and dust)
	Temperature and humidity
	Intensity and cycle of daily lighting (if artificial lighting is used)
Equipment	Feeding and watering devices designed to avoid contamination
	Feeding and watering devices designed to avoid competition between animals
	Adequate functioning of feeding and watering devices
	Functioning of ventilation devices (if artificial ventilation is used)
	Functioning of the back-up ventilation system and system alarms (if artificial ventilation is used)
	Daily check of equipment
Staff	Knowledge and qualifications
	Adequate staff numbers
Management	Frequency of inspections of the animals
	Lighting suitable for animal inspections
	No mutilation (male castration or dehorning after 4 weeks of age without anaesthesia)
	Farming practices avoiding severe or long-lasting pain or harm
	If in use, tethering systems allowing basic behaviours
	Prompt treatment of ill or injured animals
	No ill or injured animals left without proper care
Resources	Isolation of ill or injured animals
	Consultation of a veterinarian when needed
	Quantity and quality of feeding
	Frequency of feeding
	Quantity, quality and frequency of watering
Documents	Safety of drugs administered to animals (excluding prescriptions by a vet)
	Farm records compliant with legislation

Interviews and their analysis

Eight students from the French national school for veterinary services (Lyon, France) carried out the interviews. A lecturer in social sciences trained the students on research methods and sociological approaches to interviewing. Each interview was conducted by one student only. The students conducted face-to-face interviews with the farmers between January and March 2014, after contacting the farmers by phone and inviting them to take part in the study. Another student interviewed the inspectors during summer 2014 after the department to which the inspectors belong had been contacted; these interviews were conducted by phone whenever possible (about half of the interviews) or else by mail (after the questions had been sent out) when an inspector was not available for a phone interview. None of the interviewers and interviewees knew each other before the start of the study. A PhD student from the French national school for veterinary services coordinated the interviews. She selected the farmers and inspectors; she designed the interview guides – with advice from the second author – and she instructed the students on how to perform the interviews. The interviews were semi-structured interviews (Bryman, 2004). Farmers and inspectors were asked about their work and the constraints upon it. More specific issues were addressed on their perceptions of inspections, of animal welfare, of the legislation to protect farm animals and of the method to assess animal welfare in official inspections (see Supplementary Materials SM1 and SM2). For farmers, these issues were addressed among others in relation to inspections for cross-compliance with the Common Agricultural Policy. The guides were pilot-tested during face-to-face interviews with five farmers and three inspectors.

Each interview lasted approximately 1.5 h. The interviewers asked for the consent of farmers and inspectors to use a voice recorder during the interviews. They guaranteed them that the data would be anonymized and used for research purposes only. They then transcribed the interviews in full. Following Zhang and Wildemuth (2009), we qualitatively analyzed the texts, identifying the main themes emerging during the interviews (e.g. animals' emotions when the farmers referred to their animals' happiness, sadness or fear). We drew a table with these themes. Then, we read the interviews a second time to identify which farmer or inspector mentions emotions in animals or another theme and the context in which these views were expressed. The first and second authors analyzed the interviews. The results reported here correspond to concordant interpretations. The farmers' interviews provided rich narratives of their practices and their relations to the animals as well as their perception of the official inspections. The inspectors' interviews addressed the challenges of their work.

Below, we present the results of the qualitative analysis by focusing on the main themes and providing extracts of interviews to illustrate the main points that arose. We also mention how many interviews support each finding in order to give a sense of their relevance. Nevertheless, these numbers do not allow running statistical analyses. Indeed, contrary to answers to a questionnaire, when a theme is not mentioned by someone, it does not automatically follow that this person disagrees with it.

Results

The themes addressed by each interviewee are summarized in Table 2 for farmers and Table 3 for inspectors.

Inspections perceived as necessary for accountability by farmers but often considered ineffective in promoting animal welfare by both farmers and inspectors

Farmers' views. Eleven farmers perceived the inspection as something positive: to them, inspections are legitimate because there have been excesses in farming practices in the past (too much intensification of animal production) or because they receive subsidies (and they need to be accountable). In addition, the farmers agreed that the inspections have improved over time and that nowadays they are done in a professional way.

(See example in Box 1).

By contrast, six farmers saw the inspections as bureaucratic, time-consuming and not relevant in terms of assessing animal welfare. One of them (who was found not compliant with the regulation) perceived the inspections as harassment:

Farmer 7: "Ah... when you attack me like that, it goes wrong. I told them 'What you are doing here is harassment!' They accused me of killing a calf on farm [instead of sending it to the slaughterhouse], I told them, 'You do not realise the violence of your words, there'"

Inspectors' views. Most inspectors (15) insisted on the benefit of establishing a constructive dialogue with farmers during inspections, including explanations on the content of the inspection and the legislative requirements:

Inspector 6: 'You have to be a teacher and do not hesitate to repeat the explanations several times. The hardest thing to overcome is not understanding but apathy, for years of routine, social misery and lack of financial resources.'

Six of the inspectors mentioned that in some cases, they have doubts about the positive effects of giving explanations to farmers about non-compliances. When asked 'Do you have the impression that you can have a constructive dialogue with farmers?':

Inspector 1: 'Yes, when there is no problem. Not for people who deny [the evidence, in that case] only the sanction works... Farmers don't always understand why a non-compliance is a non-compliance. In the case of farmers that makes us worry; it is rarely the case because they are not

Table 2

Information on the farmers interviewed and the themes they addressed.

Farmer				Inspections				Animal welfare					Legislation			Method	
No.	Gender	Age (years)	Herd size	Must be done	Useful	Fussy	Useless	Animal state	Living conditions	Care ¹	Sentience	Production	Awareness of the legislation	Agreement with the need of legislation	Disagreement with some aspects	Professional	No value
1	M	50	13		x			x		x	x	x	x			x	
2	M	56	38		x					x	x	x	x			x	
3	M	42	45	x	x			x				x	x			x	
4	M	55	35	x	x	x		x	x	x		x	x			x	
5	M	25	70				x	x	x	x		x	x		x		x
6	F	45	40		x			x				x	x			x	
7	M	50	350				x					x	x			x	
8	M	50	120				x	x				x	x				x
9	M	25	70		x	x		x	x	x		x	x				x
10	F	45	40	x				x				x	x				
11	M	59	100				x	x	x	x		x	x		x		
12	F	45	70									x	x				
13	M	57	100		x	x				x		x	x				
14	M	.	20		x			x	x			x	x				
15	F	50	80					x	x	x		x	x			x	
16	M	55	50					x	x			x	x		x		x
17	M	58	12		x					x	x	x	x			x	
18	M	35	45		x	x						x	x		x		
19	M	25	60		x			x				x	x		x		
20	M	45	150				x	x				x	x		x		x
21	M	54	20				x	x	x			x	x		x		x
22	F	45	70					x				x	x				

¹ Including a good human-animal relationship.**Table 3**

Information on the inspectors interviewed and the themes they addressed.

Inspector			Inspection			Animal welfare						Legis. ¹	Method			Training	
No.	Gender	Background in farming	Need for dialogue	OK on good farms	No dialogue possible	Animal state	Living conditions	Care	Human-animal relationship	Sentience	Production	Disagreement with some aspects	Checklist only	Enrichment by looking at living conditions	Enrichment by observing animals	Living conditions	Animals' observation
1	M	Yes		x		x	x	x		x				x		x	
2	M	Yes		x			x	x				x		x			x
3	M	No	x			x	x							x			x
4	F	No			x		x				x						
5	F	No		x			x	x						x			
6	F	Yes ²		x		x	x	x	x			x		x		— ³	— ³
7	M	No		x		x	x										
8	F	Yes				x	x			x					x	— ³	— ³
9	M	No	x			x	x					x	x				
10	M	No					x							x			
11	M	No	x	x		x									x		
12	M	No	x							x	x				x	— ³	— ³
13	M	Yes	x			x											
14	F	No			x		x					x				x	x
15	F	No			x	x				x				x			
16	M	Yes	x						x								
17	M	No	x			x	x	x	x					x		— ³	— ²
18	M	No				x	x			x				x		x	
19	M	No	x				x	x		x				x		x	

¹ Legislation.² She had no initial background in farming but was married to a farmer.³ They would appreciate to exchange practices but do not specify on what.

Box 1

Example of a dairy cattle farmer's perception of inspections and of some aspects of the legislation.

Farmer 4: They [inspectors] come to control and if things are not in order several times in a row, you first have a warning and then you have outright penalties [and this has an impact] on the subsidies from the CAP [Common Agricultural Policy]. Well, we should have penalties if it's not right [it is fair to have penalties if you are not doing things according to the law].

Question: And they [inspectors] just tell you it's good or it's not good...?

Farmer 4: They do not advise us. If it's not good, we have to look for advice from other organisations, the Chamber of Agriculture, all the other organisations that work with us...

Q: Okay. But then, is this control useful? Does it teach you something...?

Farmer 4: Well, it teaches us... well it forces us to make recordings and then that's useful... [...]

Q: And the criteria of the controls? [...] do you find them appropriate?

Farmer: There is a proportion that makes sense, then every year they add more... (laughs)[...] So, there are some that are good and others that are not good.

Q: Like what?

Farmer: Well, it's like... uh... like for the welfare of young calves, we have no right to tether them, and young calves when they are born they can be in individual crates, from zero to 3 months, from 3 months to 6 months they must be housed in groups, and after 6 months they can be tethered.

Q: When they come for the official controls, the inspectors, do they know [their job]?

Farmer: Yes yes, yes. Well, it's professionals now. It's people who are paid if you want, like gendarmes, customs officers, who do that. So they have a ... a big checklist to fill in and then they look at [the animals] and they'll check if your cows are clean, dirty or if ... if the area is scraped, not scraped, if the manure is well stored or not...

Q: Well, they know it [their job].

Farmer: Yes, yes, they are trained to do just that. While the first controls, when they first start with the CAP subsidies, we had the first inspections... we were controlled almost every year, on the surfaces, the cereals ... Well in principle it was all young people who just graduate just the year before that were hired for a month to 6 weeks, to spend in the farms, they controlled but it was quick. If they were in doubt, there was a professional who came back to see if everything was ok or not..., while now the controls have decreased, but when we have an inspection, it can last for 2 to 3 days.

aware that the animal suffers. They deny it, so they do not agree with our reports...'.
And last, two inspectors considered that the dialogue was not possible:

Inspector 14: 'Farmers are only interested to know who denounced them to the vet services... They don't listen to our comments... It's difficult to discuss.'

These data show that the majority of farmers acknowledge that they need to be accountable for ensuring the welfare of the animals because they receive some financial support from the EU. The majority of farmers also agree that the inspections are carried out more professionally nowadays than at the beginning of the implementation of current regulation. However, a minority of them, especially those who struggle to comply with the regulation, have a more negative opinion of the inspections. These data are mirrored in the results of the inspectors'

interviews that pointed out how the inspections can foster a dialogue with the farmers about improving animal welfare (i.e. the professionalism/expertise of the inspectors is acknowledged), but these dialogues are strongly affected by farmers' compliance with the regulation. For those farmers who are not complying with the regulation, the farm inspection is often not effective in helping them to change their practice because they have a negative opinion of the inspectors and do not engage with the inspectors' recommendations.

Composite perceptions of animal welfare common to farmers and inspectors

Farmers' views. More than half of the farmers (13 out of the 22) described the welfare of their animals by referring to the outward appearance of the animals that can be observed:

Farmer 5: 'A cow, when she is not well, you can see it from her face – They are like children, you can see [from the face] if there is a problem.'

Farmer 6: 'We are used to watch our animals ... A cow, if she does not come to eat, if she stays alone, with a sad face...It is not normal...You can see it at first glance.'

Eleven farmers drew attention to the living conditions that they provided to animals as conducive to promoting animal welfare:

Farmer 4: 'If you provide straw, it is OK. It seems to me that if you have straw, enough feed, and protection, it is all OK for the animals.'

Farmer 10: 'If you give enough space, if you feed them correctly, that will be OK.'

Nine farmers mentioned the care they provide, sometimes stressing the importance of the relationship they have with their animals:

Farmer 6: [about a cow that was isolated] 'She is not punished It was difficult for her, because, as I explained she was sick ... So, as she is a good producing cow, we look after her ... We do not want her to be disturbed by the others... she must not slip, that's why we put lots of straw.'

Farmer 9: 'We respect our animals, [we treat them] like pets.'

The fact that farmers reported establishing relationships with their animals is probably linked to the relatively small size of the farms (44 cows per farm on average in France in 2018, Agreste, 2019). Indeed, in our sample, only three herds were larger than 100 cows.

Even further, three farmers (all with small herds of 12, 13 and 38 cows) considered that animals have emotions or described their relation to animals as an emotional one. They used the same words to describe the animals' emotions as those used to describe human feelings:

Farmer 2: 'My cows, they are fond of me and I am fond of them [...] Sometimes it hurts me to see them going to the slaughterhouse.'

In addition, nine farmers considered that ensuring a good level of welfare of the animal is a prerequisite to good farming, stressing the link between animal welfare and production:

Farmer 20: 'If an animal is [feeling] well, the production will be OK.'

Farmer 5: 'Anyway, if they were not well, it would not work: it is logical, if you want to produce, your cows must be in a good state of welfare.'

Inspectors' views. When asked about animal welfare, the 19 inspectors generally mentioned legislative requirements and cited the EU directives, the French legislation or the checklist used for inspections. When asked to specify what they see as important, 14 of them mentioned the living conditions of animals, including the care animals received (6 of the 14 inspectors):

Inspector 2: 'The animal must have what it needs to feed itself, to be properly housed and move freely, naturally. To meet his physiological needs, in fact. And, of course, it must not be abused.'

Inspector 5: [What is animal welfare for you?] 'The keeping, breeding, transport in conditions that respect the physiological needs of the animals, avoiding any suffering. This includes the concepts: accommodation facilities (buildings and outdoor routes, vehicles) adapted to the species and well maintained, appropriate keeping conditions (tethering, loading, mixing of animals, etc.), watering and feeding in quality and quantity, provision of appropriate care.'

Eleven inspectors mentioned the state of the animals:

Inspector 3: 'For me, a healthy and free cow, both in breeding and during transport.'

Inspector 19: 'When I see a healthy animal, ruminating, that's what animal welfare is all about. On the contrary, when on a farm it is a bit of a mess, the animals are in the shit, I know there is a problem.'

Eight inspectors put forward the issue of animal sentience. They stated that animals must not suffer (Inspectors 1, 6, 12, 19) or that welfare embraces physiological and psychological issues (Inspector 11), or they cited the definition of animal welfare from the World Organization for Animal Health (OIE), which is based on the five freedoms and thus includes the freedom from fear, distress, pain and discomfort (Inspectors 8, 18).

Five inspectors mentioned the link between animal welfare and production. Three (Inspectors 2, 4, 10) considered that animal welfare

is necessary to ensure good production. Two others (Inspectors 12, 13) warned about the risk that animals are 'over-exploited' for economic reasons, leading to reduced welfare:

Inspector 2: [Does the way you inspect farms comes from training or you apply what you are asked to?] 'No, this is based on logic. I did a 'Higher Technician Certificate' in animal productions. If you want to have animals with a production that runs well, animal welfare makes sense.'

Inspector 12: 'The state of the animal may deteriorate from time to time through the use and exploitation of animals for economic reasons.'

When asked about animal welfare, farmers and inspectors probably started out from their professional practice: observing animals for farmers – hence they put forward the appearance of the animals – and verifying compliance to the legislation for inspectors – hence, they put forward European directives and the official checklist. Nevertheless, farmers and inspectors do not seem to differ from each other in their perception of what is important for the welfare of farm animals: both farmers and inspectors associate animal welfare with the state of the animals (their health and appearance), with their living conditions including the care they receive and, to a lesser extent, with their sentience. They acknowledge a link between welfare and production. These perceptions of animal welfare co-exist. For instance, Inspector 17 refers to the living conditions of animals, their state (here behaviour) and the care provided by farmers.

Inspector 17: 'As far as possible and depending on the species concerned and the farming system, animals should be kept to a minimum (space, premises, grazing area, feeding, watering, care...) and should express their natural behaviour. And the keepers of these animals should have a pragmatic and humane approach towards their animals, without falling into excessive empathy either, and should also consider their well-being (overwork, staff...) which can influence their own approach.'

Legislation perceived as legitimate by farmers and inspectors with both parties questioning specific requirements

Farmers' views. All farmers were aware of the existence of legislation to protect animals. When questioned about the legitimacy of that legislation, seven of them agreed with the very principle of legislation, i.e. protecting animal welfare by inspecting farms is justified because the farmers receive subsidies from the Common Agriculture Policy (see example in Box 2).

However, farmers did not always agree with specific points of the legislation. Four expressed doubts or explicitly disagreed on the benefit for animal welfare of the requirement to accommodate calves in group pens after 8 weeks of age (according to EU Directive 2008/119/EC (European Council, 2009)) or of not tethering cattle (which is still legal in the EU but on the condition that it does not lead to injuries (Directive 98/58/EC)):

Farmer 3: 'We do not understand the regulation about calves, it is too much. I think that if they have good feeding, there is no problem.'

Farmer 5: 'They decreed that we could not chain the cows anymore, but before, when we were children, cows were tied all the winter and they were happy.'

Six farmers argued that France applies the legislation more strictly than other EU member states:

Farmer 3: 'The regulation in France...It becomes absurd... They are not adapted to the real life and we have more regulations in our country.'

Farmer 13: 'The regulation is not the same in France, even if we are in the European Union [meaning it is set at higher standards that penalise French farmers].'

Inspectors' views. Several inspectors reported that farmers do not understand the reason for specific requirements, e.g. the absence of harmful objects such as metal or disused machines in pastures or the banning of tethering calves. Four of them mentioned that they themselves have difficulties in explaining the value of these specific points to the farmers:

Box 2

Example of a dairy cattle farmer's perception of the legislation to protect animals.

Farmer 4: They [inspectors] come to control and if things are not in order several times in a row, you first have a warning and then you have outright penalties [and this has an impact] on the subsidies from the CAP [Common Agricultural Policy]. Well, we should have penalties if it's not right [it is fair to have penalties if you are not doing things according to the law].

Question: And they [inspectors] just tell you it's good or it's not good...?

Farmer 4: They do not advise us. If it's not good, we have to look for advice from other organisations, the Chamber of Agriculture, all the other organisations that work with us....

Q: Okay. But then, is this control useful? Does it teach you something...?

Farmer 4: Well, it teaches us... well it forces us to make recordings and then that's useful... [...]

Q: And the criteria of the controls? [...] do you find them appropriate?

Farmer: There is a proportion that makes sense, then every year they add more... (laughs)[...] So, there are some that are good and others that are not good.

Q: Like what?

Farmer: Well, it's like... uh... like for the welfare of young calves, we have no right to tether them, and young calves when they are born they can be in individual crates, from zero to 3 months, from 3 months to 6 months they must be housed in groups, and after 6 months they can be tethered.

Q: When they come for the official controls, the inspectors, do they know [their job]?

Farmer: Yes yes, yes. Well, it's professionals now. It's people who are paid if you want, like gendarmes, customs officers, who do that. So they have a ... a big checklist to fill in and then they look at [the animals] and they'll check if your cows are clean, dirty or if ... if the area is scraped, not scraped, if the manure is well stored or not...

Q: Well, they know it [their job].

Farmer: Yes, yes, they are trained to do just that. While the first controls, when they first start with the CAP subsidies, we had the first inspections... we were controlled almost every year, on the surfaces, the cereals ... Well in principle it was all young people who just graduate just the year before that were hired for a month to 6 weeks, to spend in the farms, they controlled but it was quick. If they were in doubt, there was a professional who came back to see if everything was ok or not..., while now the controls have decreased, but when we have an inspection, it can last for 2 to 3 days.

Inspector 9: 'They [the farmers] don't understand why one must clear the pastures of everything if there has never been an accident. Anyway, we cannot always explain all items of the checklist.'

Inspector 2: 'Farmers do not understand why tethering of calves is banned, because they were used to this. I confess that I myself have trouble with it [the ban].'

Inspector 6: 'Farmers are puzzled over the regulation of calves. I saw beautiful calves tethered in good straw and in much better conditions than some kept in groups. And yet it is [the farmer with] tethered calves who is penalised....'

The very principle of a legislation to protect animals is thus not questioned but both farmers and inspectors challenge the pertinence

of specific requirements, especially regarding the housing of calves (no tethering, collective pens).

Limitations of the method used for inspection highlighted by farmers and inspectors

Farmers' views. Nine farmers acknowledged that the inspections are done professionally, better than in the past, even though it may be burdensome for the farmer and the inspectors may be fussy (see example in [Box 2](#)).

By contrast, six farmers did not seem to value the method used for inspections. For instance, four farmers described the work of inspectors as merely 'ticking boxes':

Farmer 4: 'They have boxes to fill in... They follow the checklist, that's all [they do not reflect on what is going on in the farm]. What they really think of the farm, it does not matter for the control, it is only important to fill in the form and tick boxes ... the inspector, she/he may be aware that an accident has happened (e.g. the breaking of a syringe while administering a drug, without intention to harm the animal) but she/he has to put in his report and fill in the box.'

Inspector' views. When questioned about the inspection method, the inspectors spontaneously reported that they use the official checklist. One inspector only, however, reported that he exclusively followed that checklist.

Several inspectors reported that the method used for inspections does not allow them to assess animal welfare but only to detect cases of mistreatment. Three inspectors (4, 13, 18) made this point very explicit:

Inspector 18: 'We miss indicators on the body condition of animals. In addition, our checklist deals essentially with abuse and not with animal welfare.'

Inspector 4: 'It is always the problem with welfare assessment, I don't know if it's our job to assess welfare, rather malaise, animal protection, because we don't actually check welfare. I don't think I really check animal welfare, but it's rather in animal protection that we have problems, welfare problems: everything about dairy cows, about veal calves, it's complicated... In fact, I don't really check welfare. I think so.'

And three other inspectors (1, 5, 6) reported that the inspections can only have an impact in cases of extreme situations.

Most inspectors (13) confirmed that they use other criteria from their own experience in addition to the official checklist to assess the conditions of the animals. These inspectors explained that they first take an overview of the farm, looking at animals (all 13 inspectors) or their living conditions (10 of them), before dealing with the precise items on the checklist:

Inspector 5: 'The official method is the checklist but we have to learn to cope otherwise, because it is not sufficient, not accurate enough to have a right view of the level of animal welfare.'

Inspector 1: 'I start with an overall assessment of the farm, an overview and then I go into more detail. I perform the inspections on average, on batches of animals, then I look at the detail: first the general state of the animals (fattening), then their accommodation (if they are in the shit, if there is something that can hurt them, the watering and the feeding), then the detail (are there lame or injured animals).'

Inspector 2: 'I first look at the physical condition of the animal, its size depending on age, its body condition. Then its environment: is the pen properly mulched, well ventilated, if there is food and water...'

Another inspector (16) – who did not report adding her own criteria when inspecting farms – nevertheless expressed a wish that the inspection includes observations of the animals.

These inspectors reported that the checklist is something they have to use and that the training they received on how to conduct the inspections was only theoretical. They mentioned that they built their competences thanks to experience in inspecting farms, exchanges with other inspectors or by using their own agricultural background. Three of them (Inspectors 4, 12, 13) mentioned that the method they use to inspect farms is – at least partly – subjective:

Inspector 4: 'I begin with an overall analysis of the farm, then I go through details and I try to have a look at each animal. But all is very subjective.'

Inspector 12: 'Animal welfare is a very subjective value, specific to the inspector; the inspection of a barn can be different from one person to another, for example, for ammonia emissions.'

Nine inspectors (not necessarily the same as the 14 cited above) expressed a wish to benefit from training on how to assess animal welfare; three specified that they would appreciate being trained on the assessment of animals' living conditions (e.g. on feeding and

housing) and three that they would appreciate knowing more about how to observe animals (behaviour, diseases):

Inspector 3: 'We would need a veterinary approach, to see the diseases, to go on a tour with veterinarians to see the disease and say that if the cow has that, one [the farmer] shouldn't do that. And there is a need for more training in welfare, but more practical: starting from the disease, find the causes and improve welfare.'

Inspector 14: 'The method in use is based on the checking of the equipment and of the feeds. Training on how to feed animal and on animal behaviour would be necessary.'

There seem to be opposite views among farmers about the effectiveness of the inspection method, with a large number of them considering that the current method is a box ticking exercise. Interestingly, the majority of the inspectors also pointed out the limits of using only the checklist imposed by their administration and explained that they use additional indicators, especially the body condition of the animals.

Discussion

This study provides new knowledge on how farmers and their inspectors perceive inspections to check compliance with the EU legislation to protect animals. We did not aim to get a representative sample of farmers and inspectors but rather to investigate the range of their perceptions in order to identify ways to make inspections more positively perceived and thus more likely effective in promoting changes for better animal welfare.

The farmers we interviewed seemed to agree with the principle of legislation to protect animals and on the need for inspections because there have been excesses in the past leading to poor animal welfare and because they receive public subsidies. This corroborates recent findings from Liu et al. (2018) that farmers consider sanctions are fair as a deterrent to prevent poor welfare (in Liu et al.'s study, poor welfare corresponds to more than 10% lame sheep in a herd). In addition, the farmers we interviewed acknowledged the expertise of inspectors. Most farmers considered that the official inspections for animal welfare are useful or at least legitimate. However, as reported in previous research (Hubbard and Scott, 2011; Escobar and Demeritt, 2017), a significant proportion of farmers complained about the inspections, considering them 'too fussy' or even 'useless'.

French inspectors have to fill in a detailed form with 32 items to be checked on the environment in which the animals live (state of the pastures or of the buildings; equipment in use for feeding, watering or ventilation) and on the management of the animals (regular inspections, specific care to diseased animals...). Despite such a detailed checklist, some of the interviewed inspectors considered that the inspection method does not allow them to assess animal welfare but only to detect abuses of animals. Indeed, most inspectors reported using their own criteria in addition to those in the official checklist, especially criteria related to the physical condition of animals. This may explain the discrepancy observed by Lomellini-Dereclenne et al. (2017) between the results of the checklist and the overall assessment that French inspectors make of a farm (see Introduction). In addition, several inspectors reported that the assessment is subjective, even when indicators are taken on the living conditions of animals, such as the ambience in a barn. This suggests that the official checklist is detailed but remains imprecise – at least on some points – and incomplete. There is thus a need to improve the method for inspection.

When questioned about their perceptions of animal welfare, both farmers and inspectors mentioned the physical condition of the animals – including their emotions – their living conditions, and the care they receive from the farmer. These perceptions co-exist, revealing that most farmers and inspectors acknowledge that welfare combines various aspects, some related to the state of the animals and others to their living conditions. Such a mix of outcome-based indicators

(observation of animals) and resource-based indicators is commonly used as a broad framework for legislation. The five freedoms from the Farm Animal Welfare Council from which the EU legislation is largely derived combine the state of the animal and provision to reach that state, e.g. Freedom from hunger and thirst (state of the animals) by ready access to fresh water and a diet to maintain full health and vigour (provision) (Farm Animal Welfare Council, 1992). The same is observed in the definition of welfare by OIE or proposed as a framework to design a Canadian legislation to protect animals (World Organization for Animal Health (OIE), 2011, Fraser et al., 2018). Such commonalities on the definition of animal welfare open possibilities to set up indicators that would be agreed by both farmers and inspection services (including their supervising body that in France is the Ministry of Agriculture).

Both farmers and inspectors valued observations of animals as a means to assess their welfare. Such indicators are not explicitly mentioned in the official checklist. A resource-based requirement may nevertheless be checked by animal-based indicators (Lundmark et al., 2016). For instance, regarding the items 'building materials not harmful to animals' and 'no sharp edges likely to harm animals', one can check if animals are not injured. In addition, terms used in the French current inspection methods are vague (e.g. 'quality of ambient air' (gases and dust)) and so open to subjectivity and to criticism from producers (Grandin, 2010; Bilchitz, 2012). Vague concepts, however, may result in inspectors using common sense rather than adhering to strict requirements. In the present case, animal-based indicators may be closer to common sense.

The value of animal-based indicators is acknowledged by many scientists as well as official bodies such as the European Food Safety Authority (EFSA) and the EU Commission (EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), 2012, European Commission, 2012) on the ground that they are closer to the welfare as experienced by an animal, whereas indicators taken of resources or of the care provided to animals are only risk factors for welfare (Keeling et al., 2013). There is, nevertheless, a low level of adoption of animal-based indicators at a practical level, especially in the legislation (EFSA (European Food Safety Authority), 2015). For instance, in the UK and Sweden, inspectors that check compliance with EU legislation or to assurance schemes (the 'Assured Dairy Farms' scheme of Red Tractor, the Organic schemes of the Soil Association in the UK and the standards of the dairy company, Arla Foods, in Sweden) base their assessment essentially on resource-based indicators (Hedman et al., 2018; Lin et al., 2018). Keeling (2009) found that inspectors using animal-based indicators made similar requests for improvement and felt use of such indicators may not only make the assessment more relevant but also lead to more consistency between inspectors.

According to EFSA (2015), the lack of use of animal-based indicators may come from a lack of homogeneous definitions of such measures. EFSA therefore urges for standardization of the terminology and methods to record animal-based measures. The lack of use of animal-based indicators may also come from a lack of experience in using such indicators.

Although the inspectors we interviewed had received theoretical training before they started inspecting farms, this training seemed insufficient. The majority of inspectors reported that they gained competences through experience, exchanges with other inspectors or by using their agricultural background. Also, they would like to receive more practical training (on how to observe animals, on feeding requirements or on housing). In recent years, protocols were developed for the assessment of the welfare of cattle, goats, horses, pigs or poultry and they allow a very good consistency between assessors, as long as these receive adequate training (Blokhuys et al., 2013; Croyle et al., 2018; Sommerville et al., 2018; Vieira et al., 2018). These protocols, that generally mix animal-based and resource-based indicators, could form the basis for inspectors to gain competences.

Several of the interviewed inspectors reported that they take an overview of the animals and their living conditions on arrival at a farm before

considering in detail the checklist they have to fill in. The benefit of such an overall approach before going into detail is confirmed by the study from Czycholl et al. (2018) on the assessment of horse farms. Such a practice would certainly benefit the current inspection method.

Negative perceptions of inspections may also come from disagreement on specific requirements of the legislation to protect animals. In our study, both farmers and inspectors expressed doubt about the benefit of some provisions, such as the restriction on tethering animals. When people know regulatory requirements only through official inspections, these requirements are more likely to be seen as constraints, especially when farms are found not compliant. In addition, experiencing an inspection without knowing the rulemaking process for EU animal welfare regulations and the very basis of the requirements may lead to the demonization of the institution held responsible for all these 'evils' (in the case of animal welfare regulations, this is often the EU). By contrast, when the rule is known, approved and recognised as legitimate, compliance with them is higher (Uphoff, 2019). EU directives to protect animals result from scientific reports that include scientific and, in general, also technical knowledge from field actors (see for instance the report on the welfare of calves by Algers et al., 2006). Understanding the bases of legislative requirements would make inspectors more confident in their inspections, including communicating non-compliances to farmers, and farmers more committed to implement changes in their practices.

In conclusion, it is not the inspections *per se*, but how they are currently conducted that leads to farmers' negative perceptions. In the case of checking the cross-compliance of cattle farms with the EU Directive 98/58/EC – that contains general requirements whatever the species – a close dialogue between the administration that put in place the inspection process (in France, the central services of the Ministry of Agriculture), the farm inspectors (in France, the regional services of the Ministry), the farmers, and animal welfare scientists would help to design an inspection method that better fits the purpose of ensuring animal welfare. Exchanges of experience between inspectors and practical training would certainly reinforce inspectors' expertise and confidence. We also suggest introducing animal-based measures to check animal welfare to increase the confidence in inspections by both farmers and inspectors. Last, inspectors play a crucial role in explaining the requirements of the legislation and the results (of the inspection) to farmers in order to motivate them to improve their compliance to legislative requirements to protect animals and in turn, the welfare of the animals on their farms. To play this role, however, inspectors should themselves be confident about the legislation itself, e.g. by having received sufficient information on the rationale behind the legislation.

Supplementary materials

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.animal.2020.100038>

Ethics approval

Not applicable.

Data and model availability statement

Not applicable.

Author ORCID's

Isabelle Veissier : 0000-0002-8497-5395; Mara Miele : 0000-0002-5774-2860; Luc Mounier : 0000-0003-1083-8563.

Author Contributions

Isabelle Veissier: Conceptualization - Methodology - Formal analysis - Data Curation - Writing-Original Draft - Writing-Review & Editing - Visualization. Mara Miele: Conceptualization - Methodology - Formal analysis - Data Curation - Writing-Original Draft - Writing-Review & Editing - Visualization. Luc Mounier: Conceptualization - Methodology - Writing-Review & Editing -Funding acquisition.

Declaration of interest

None.

Acknowledgements

We thank the farmers and the inspectors who gave their time for the interviews, and we are grateful to the students who carried out the interviews, namely Anne-Cécile Meyer Warnod, Cecile Adam, Philippe Ambroise, Heidi Beaudoin, Bénédicte Beneult, Amal Boutaleb, Coraline Chamoret, Sandy Lecoq-Espellargas and Laure Paget, and offer our thanks to Frédéric Mougeot and Anne-Claire Lomellini-Dereclenne who supervised their work. We thank Diane Bowden for editing the English writing. I. Veissier's work is supported by the French government IDEX-ISITE initiative 16-IDEX-0001 (CAP 20-25).

Financial support statement

Veissier's work is supported by the French government IDEX-ISITE initiative 16-IDEX-0001 (CAP 20-25). A.C. Lomellini-Dereclenne received a grant from the French Ministry of Agriculture (FCPR programme - Formation Complémentaire par la Recherche).

References

- Agence fédérale belge pour la sécurité de la chaîne alimentaire, 2015. Grilles d'inspection pour la détention d'animaux de production générale, élevage de poules pondeuse en cages aménagées, élevage de poules pondeuse en système alternatif, élevage de porcs, élevage de veaux, élevages d'oiseaux de gavage, de ratites et de poulet de chair. In: <http://www.favv.be/checklists-fr/secteuranimal.asp> (last visit 20 December 2017).
- Agreste, 2019. Produits agroalimentaires/Bovins. GRAPH'AGRI 2019, pp. 155–161 Available at: <https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/GraFraChap12.6/Graf1946%20-%20Bovins%20productions%20laitic%C3%A8res.pdf>. (last visit 5 June 2020).
- Algers, B., Broom, D.M., Canali, E., Hartung, J., Smulders, F., van Reenen, K., Veissier, I., 2006. Opinion on "The risks of poor welfare in intensive calf farming systems. An update of the Scientific Veterinary Committee Report on the Welfare of Calves". *EFSA Journal* 366, 1–36 (annex).
- Anneberg, I., Vaarst, M., Sorensen, J.T., 2012. The experience of animal welfare inspections as perceived by Danish livestock farmers: a qualitative research approach. *Livestock Science* 147, 49–58.
- Anneberg, I., Vaarst, M., Sandoe, P., 2013. To inspect, to motivate - or to do both? A dilemma for on-farm inspection of animal welfare. *Animal Welfare* 22, 185–194.
- Bilchitz, D., 2012. When is animal suffering 'necessary'? *Southern African Public Law* 27, 3–27.
- Blokhuis, H., Miele, M., Veissier, I., Jones, B., 2013. Improving farm animal welfare - Science and society working together: the welfare quality approach. Wageningen Academic Publishers, Wageningen, NL.
- Bryman, A., 2004. *Social research methods*. 2nd edition. Oxford University Press, Oxford, UK.
- Croyle, S.L., Nash, C.G.R., Bauman, C., LeBlanc, S.J., Haley, D.B., Khosa, D.K., Kelton, D.F., 2018. Training method for animal-based measures in dairy cattle welfare assessments. *Journal of Dairy Science* 101, 9463–9471.
- Czycholl, I., Buttner, K., Klingbeil, P., Krieter, J., 2018. An indication of reliability of the two-level approach of the AWIN welfare assessment protocol for horses. *Animals* 8, 7.
- EFSA (European Food Safety Authority), 2015. EFSA's internal project on the use of animal-based measures to assess animal welfare in EU - state of art of the 10 years of activities and analysis of the gaps. EFSA supporting publication 2015:EN-884 21 pp. Available at: <https://efsa.onlinelibrary.wiley.com/doi/abs/10.2903/sp.efsa.2015.EN-884> (last visit 5 June 2020).
- EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), 2012. Scientific opinion on the use of animal-based measures to assess welfare in pigs. *EFSA Journal* 10 2512 (2585 pp.). Available online. www.efsa.europa.eu/efsajournal (last visit 5 June 2020).
- Escobar, M.P., Demeritt, D., 2017. Paperwork and the decoupling of audit and animal welfare: the challenges of materiality for better regulation. *Government and Policy* C 35, 169–190.
- European Commission, 1998. Council directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes. *Official Journal of the European Communities* 221–223 8. 8. 98.
- European Commission, 2012. European union strategy for the protection and welfare of animals 2012–2015.20 January 2012. Available at: https://ec.europa.eu/food/sites/food/files/animals/docs/aw_eu_strategy_19012012_en.pdf (last visit 5 June 2020).
- European Council, 2009. COUNCIL DIRECTIVE 2008/119/EC of 18 December 2008 laying down minimum standards for the protection of calves. *Official Journal of the European Union* 7–13 15.1.2009.
- Farm Animal Welfare Council, 1992. FAWC updates the five freedoms. *The Veterinary Record* 17, 357.
- Fraser, D., Koralesky, K.E., Urton, G., 2018. Toward a harmonized approach to animal welfare law in Canada. *The Canadian Veterinary Journal* 59, 293–302.
- Grandin, T., 2010. Implementing effective standards and scoring systems for assessing animal welfare on farms and slaughter plants. In: Grandin, T. (Ed.), *Improving animal welfare: a practical approach*. CAB International, Wallingford, UK, pp. 32–49.
- Hedman, F.L., Hultgren, J., Rocklinsberg, H., Wahlberg, B., Berg, C., 2018. Non-compliance and follow-up in Swedish official and private animal welfare control of dairy cows. *Animals* 8, 72.
- Hubbard, C., Scott, K., 2011. Do farmers and scientists differ in their understanding and assessment of farm animal welfare? *Animal Welfare* 20, 79–87.
- Keeling, L.J., 2009. An analysis of animal-based versus resource-based comments in official animal welfare inspection reports from organic and conventional farms in Sweden. *Animal Welfare* 18, 391–397.
- Keeling, L., Evans, A., Forkman, B., Kjaernes, U., 2013. Welfare quality(R) principles and criteria. In: Blokhuis, H.J., Jones, R.B., Veissier, I., Miele, M. (Eds.), *Improving farm animal welfare - Science and society working together: the Welfare Quality approach*. Wageningen Academic Publishers, Wageningen, NL, pp. 91–114.
- Kirchner, M.K., Westerath-Niklaus, H.S., Knierim, U., Tessitore, E., Cozzi, G., Vogl, C., Winckler, C., 2014. Attitudes and expectations of beef farmers in Austria, Germany and Italy towards the Welfare Quality (R) assessment system. *Livestock Science* 160, 102–112.
- Kuhn, G., Pyczak, T., Sievert, H., Haring, G., 2008. Implementation of cross-compliance related to animal welfare. *Deutsche Tierärztliche Wochenschrift* 115, 89–94.
- Lin, Y.C., Mullan, S., Main, D.C.J., 2018. Use of welfare outcome information in three types of dairy farm inspection reports. *Asian-Australasian Journal of Animal Sciences* 31, 1525–1534.
- Liu, N.L.B.H., Kaler, J., Ferguson, E., O'Kane, H., Green, L.E., 2018. Sheep farmers' attitudes to farm inspections and the role of sanctions and rewards as motivation to reduce the prevalence of lameness. *Animal Welfare* 27, 67–79.
- Lomellini-Dereclenne, A.C., Miele, M., Mounier, L., Veissier, I., 2017. Implementation of the European legislation to protect farm animals: a case study on French inspections to find solutions to improve compliance. *Animal Welfare* 26, 311–321.
- Lundmark, F., Rocklinsberg, H., Wahlberg, B., Berg, C., 2016. Content and structure of Swedish animal welfare legislation and private standards for dairy cattle. *Acta Agriculturae Scandinavica Section a-Animal Science* 66, 35–42.
- Miele, M., Bock, B.B., 2007. Competing discourses of farm animal welfare and agri-food restructuring, editorial. *International Journal of Sociology of Agriculture and Food* 15, 1–7.
- Ministère français de l'agriculture, 2015. Les vade-mecum D'inspection. In: <http://agriculture.gouv.fr/les-vade-mecum-dinspection> (last visit 20 December 2017).
- Roe, E., Buller, H., Bull, J., 2011. The performance of farm animal assessment. *Animal Welfare* 20, 69–78.
- Sommerville, R., Brown, A.F., Upjohn, M., 2018. A standardised equine-based welfare assessment tool used for six years in low and middle income countries. *PLoS One* 13, e0192354.
- Uphoff, N., 2019. *Improving international irrigation management with farmer participation: getting the process right*. Westview Press, Boulder, CO, USA.
- Vieira, A., Battini, M., Can, E., Mattiello, S., Stilwell, G., 2018. Inter-observer reliability of animal-based welfare indicators included in the animal Welfare indicators welfare assessment protocol for dairy goats. *Animal* 12, 1942–1949.
- World Organization for Animal Health (OIE), 2011. Terrestrial animal health code. Available at: <https://www.oie.int/en/standard-setting/terrestrial-code/access-online/> (last visit 5 June 2020).
- Zhang, Y., Wildemuth, B.M., 2009. Qualitative analysis of content. In: Wildemuth, B.M. (Ed.), *Applications of social research methods to questions in information and library science*. Libraries Unlimited, Exeter, UK, pp. 1–12.