

Conflicting goals of welfare assessment schemes: a case study

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Abstract

The aim of this article is to discuss the farming industry's development and use of welfare assessment schemes. A welfare assessment scheme developed by the Danish Cattle Federation (DCF) is used as a case study. The declared aim of the DCF scheme is to improve animal welfare, farm profitability and dialogue with the public. It is the purpose of this article to attempt to understand the dilemmas arising from this broad aim. We ask how DCF measures of welfare compare with alternative measures in which economic factors receive less emphasis. We bring in farmers' views on whether the DCF's parameters of welfare track welfare effectively and are economically feasible. We also discuss how the views of the Scandinavian public on animal welfare influences the likelihood that the DCF scheme will improve dialogue with the public. The DCF definition of welfare is broad, but the measures it deploys are more limited and indeed very narrow compared with those in other welfare assessment schemes. This may not be a problem if the goal is to improve farm profitability. However, if the goal is to improve welfare, limited measures are problematic, and this may undermine attempts to improve dialogue with the public.

Keywords: animal-based measures, animal welfare, citizens' views on welfare, dairy cattle, farmers' views on welfare, farming industry welfare scheme

Introduction

Traditionally, methods of animal welfare assessment have been developed by animal welfare scientists before being used by the relevant authorities, organic organisations and animal welfare organisations. More recently, the farming industry has taken up a developmental role. For example, the Danish Cattle Federation (DCF) has devised a welfare assessment scheme in co-operation with the Swedish Dairy Association. This latter initiative represents an attempt to meet one of the goals stated in the DCF's Policy Paper on Animal Welfare, namely that the animals kept on Danish cattle farms should live good lives and be treated with care and respect (DCF 2006a). However, at the same time, the DCF asserts that its main task is: "To work for the best possible income for cattle farmers" (DCF 2008); and it has also been stated that the DCF assessment scheme should improve dialogue with the public (Enemark 2003).

It is obvious that, with these three types of goal in place simultaneously, dilemmas may occur. For example, in certain situations there may be a conflict between the best possible welfare for the animals and the best possible income for the farmers. The aim of this paper is to discuss the potentially conflicting goals that may present an obstacle to the farming industry's attempt to develop and use welfare assessment schemes, as exemplified by DCF.

A first question about the potential for conflict here is whether DCF's focus on the economic success of commercial farms creates bias in its choice of parameters of welfare, emphasising those that correlate positively with profitability and putting less emphasis on parameters that researchers and other stakeholders in the field of dairy cattle welfare may see as relevant. To investigate this, in the next section of the paper we will compare the measures used by DCF with those used in other current schemes.

Clearly, the fact that the DCF scheme is voluntary, places a great onus on farmers' co-operation. This leads to a second question guiding our investigation, most notably whether, according to the farmers involved, the parameters in the DCF scheme track welfare successfully and are economically viable. A third question is whether, in the DCF scheme, the public's conception of welfare is taken sufficiently into account to allow the scheme to improve dialogue with the public. We therefore also compare the DCF scheme with views of animal welfare held by Scandinavian citizens. Our findings here, and other relevant data based on interviews and surveys, will be presented in the second main section of this paper.

In the *Discussion* section of the paper we aim to bring together our findings on the economic emphasis of the DCF scheme, on farmers' views and Scandinavian attitudes to farm animal welfare; examining the interplay between them.

Comparing the DCF scheme with other current schemes

In this section, the DCF welfare assessment scheme is compared with three other schemes — one developed by animal welfare scientists, one used by an animal welfare organisation, and one used by an organic organisation. These schemes have been chosen because we wanted to compare the DCF scheme with alternatives developed by people who see cattle welfare from perspectives other than that of a farmers' organisation. We have chosen Danish welfare assessment schemes (Cow Life 100) where possible. When Danish schemes were not available, we have chosen important international welfare assessment schemes (Welfare Quality® and Freedom Food). These three schemes have been developed for practical use and are of recent origin. Two other schemes that were considered were The Bristol Welfare Assurance Programme (BWAP) and TGI 200. BWAP was developed by scientists at the University of Bristol. The parameters in BWAP are primarily animal-based; the scheme provides a generic description of a methodology that could be used for various purposes, including assessing compliance with welfare legislation or farm assurance standards (Leeb *et al* 2004). TGI 200 was developed for on-farm welfare assessment which would allow farms to be compared, but also to provide advice and support for farmers on how to improve welfare (Sundrum 1997). The parameters in TGI 200 are primarily resource-based. BWAP and TGI 200 are, however, more or less covered by the content of the three other schemes, and so we decided to focus on these.

The welfare assessment scheme of the Danish Cattle Federation

The DCF scheme is intended to be an advisory tool; it is meant to provide a basis for discussion with the farmer about how to maintain or improve animal welfare (Rousing & Enemark 2007), and it is based on a general definition of animal welfare: "Animal welfare consists of the positive and negative experiences of the animals" (DCF 2006a). The parameters in the DCF scheme are all animal-based. It has been argued that such parameters are the most direct indicators of welfare (Rousing & Enemark 2007). For calves and young stock, DCF's parameters are: health (including lameness for young stock), injuries, body condition, skin condition, and cleanliness. The parameters in the DCF scheme for cows are: rising behaviour, human approach test, hoof condition, injuries, lameness, body condition score, cleanliness and skin condition. To carry out DCF welfare assessments takes approximately two hours.

DCF welfare assessments were originally intended to be widely implemented on the Danish dairy cattle farms (Enemark 2005). In practice, however, implementation of the welfare assessment has so far been based on the farmer's own initiative: the farmer must contact an agricultural advisor if he or she wishes a welfare assessment to be carried out, and pay for it. The scheme has been available on a website for agricultural advisors since 2006 (DCF 2006b), and the DCF has arranged two training courses (with 15 and

11 participants, respectively) on how to carry out welfare assessments for agricultural advisors (agronomists and veterinarians). When we contacted the participants of the courses in December 2008, none of the advisors who responded had sold a single welfare assessment. The advisors believe farmers are deterred by having to pay for welfare assessments.

The welfare assessment protocol of Welfare Quality®

Welfare Quality® is an EU-funded project designed to develop reliable, on-farm monitoring systems, product information systems, and practical species-specific strategies to improve animal welfare. Forty-four institutes and universities with specialist expertise participate in this integrated research project, which is due to be completed in 2009. The welfare assessment schemes being devised by Welfare Quality® are still under development, and may be simplified in later versions (Welfare Quality® 2008).

In Welfare Quality®, welfare assessments are based on four principles — of good feeding, good housing, good health, and appropriate behaviour. The four principles are divided into 12 welfare criteria: absence of hunger; absence of prolonged thirst; comfort around resting; thermal comfort; ease of movement; absence of injuries; disease and pain induced by management procedures; expression of social behaviour; expression of other behaviours; good human-animal relationship and absence of general fear. The Welfare Quality® approach emphasises the animal's point of view by using animal-based measures, such as behavioural observations and tests as well as clinical parameters. Environmental and management-related measures are included if no feasible animal-based measures are available (Winckler 2008). Welfare Quality® assessments take 5–8 h (Winckler 2008). Because the Welfare Quality® project is yet to be concluded, no clear implementation plan has so far been put in place.

RSPCA Welfare Standards for Dairy Cattle/Freedom Food

Freedom Food is a farm assurance and food-labelling scheme set up by the animal welfare organisation, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) in 1994. The RSPCA Standards for Dairy Cattle (2008) are based on the 'Five Freedoms' defined by the Farm Animal Welfare Council (FAWC) (2008): freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury and disease; freedom to express normal behaviour and freedom from fear and distress.

The welfare standards of the RSPCA are very comprehensive. They focus on food and water, environment, management, health, transport, and slaughter.

In order to receive the Freedom Food label, farmers must keep their animals in accordance with the RSPCA Standards for Dairy Cattle. Upon satisfactory inspection, farmers may subscribe to the scheme and use the Freedom Food trademark. All participants are regularly assessed by Freedom Food Ltd (RSPCA 2008).

Cow Life 100, Heifer Life 100 and Calf Life 100

Cow Life 100, Heifer Life 100, and Calf Life 100 were developed by the Danish organic organisation 'Økologisk Landsforening' together with Aarhus University. The schemes are intended to be a tool with which farmers can assess the welfare of their animals. They are meant to provide a basis for consideration of what changes and improvements may be needed (Vaarst & Nissen 2006).

In Cow Life 100, it is stated that we have a duty to care for animals when we keep them and that it is important to give animals good conditions of life, in accordance with their natural needs — for example, by housing them together in groups, allowing them to go outdoors, and by letting young calves suckle (Nissen & Vaarst 2004; Vaarst *et al* 2007).

Calf Life 100 is divided into three main areas: naturalness, human care, and the response of the calf to the environment. Heifer Life 100 is divided into five main areas: environment indoor; outdoor environment summer; feed and water; management and clinical parameters. The same areas are applied in Cow Life 100, which includes in addition: group composition and group stability and the history of the cows.

It takes approximately 1.5 h to carry out these welfare assessments for each group of animals, and implementation of the schemes is voluntary.

Comparison of DCF and the other welfare assessment schemes

The focus in our comparison is not on numerical measures — that would be unfair since Welfare Quality® is still under development and may contain more measures than it will in the final version. Rather, the focus is on the balance between different types of measure. Here, we distinguish between three kinds of measure. These relate to: i) health and hygiene; ii) behavioural needs and emotions and iii) natural living (Tables 1–3). In Table 4, we indicate whether animal welfare is assessed on-farm only or also during transport or at slaughter.

The DCF scheme includes a number of clinical parameters which are all included in the alternative welfare assessments mentioned above, despite the fact that they have different definitions of welfare.

The two behavioural parameters included in DCF's scheme are also widely accepted as parameters relevant for welfare: rising behaviour is included in all the welfare assessment schemes (Welfare Quality® measures lying down instead of rising behaviour) with some variation (forced vs spontaneous, supplement to space requirements). Human approach is included by Welfare Quality® and Calf Life 100.

However, some types of parameter that the DCF scheme does not measure are included in other welfare assessment schemes. Welfare Quality® includes many more behavioural tests, and observations of natural behaviour, abnormal behaviour, and behaviours indicating 'conflicts' with housing equipment. It also incorporates some resource-based measures, such as presence of tethering, water points, and outdoor access, that are absent from the DCF scheme.

In the Freedom Food and Cow Life 100 schemes, clinical parameters are combined with a long and detailed list of resource-based measures (Cow Life 100), or with requirements concerning space, bedding, feed, water, and outdoor access (Freedom Food).

Perceptions of animal welfare by farmers, welfare inspectors and citizens

We based our summary of farmers' views on welfare and on the DCF scheme on a questionnaire sent to farmers in connection with a welfare assessment carried out by the DCF in 2005. Comments by welfare inspectors are drawn from personal communications. Our description of welfare concerns among the public in Scandinavia is based on an internal survey of Danish citizens' attitudes to Danish milk production carried out by Arla and DMA/Research (Ellegård 2001) and published data from focus group interviews carried out in Norway and Sweden (Petterson & Bergman 2007; Terragni & Torjusen 2007).

The pilot study of DCF's welfare assessments

Welfare assessments were carried out by two agricultural technicians from the DCF on 40 dairy cattle farms in May and June, and again in November and December, 2005. Thirty-four of the 40 farmers also answered a questionnaire focusing on their views on animal welfare and on the DCF welfare assessment scheme.

Farmers' views on welfare and on the DCF welfare assessment scheme

Farmers' attitudes to the DCF welfare assessment scheme were generally positive. Of the farmers surveyed, 85% find the results of DCF welfare assessments to be in accordance with their own impression of welfare levels on the farm; 80% believe in a positive correlation between animal welfare and a good production economy; 70% were able to find areas of concern on the basis of the results of the assessment and 66% stated that they can use the results of the assessment in their daily work.

Despite the clear correlation of the results of the welfare assessments and the farmers' own impressions of animal welfare levels on their farms, only 3% of farmers think that it is a good idea to allow the result of the welfare assessment to influence the price they are paid for milk.

Each farmer was asked to give his/her three preferred parameters for calves, young stock and cows. In the scheme for calves and young stock, farmers could choose between: health; injuries; body condition; skin condition; cleanliness and 'other'. Farmers considered health (91%), cleanliness (71%), body condition, and skin condition (59%) to be among the three most important parameters for calves. The farmers' three preferred parameters for young stock were body condition (79%), health (72%), and skin condition (67%). All of the parameters farmers believe to be most important to the welfare of calves and young stock relate to health and hygiene. This is perhaps unsurprising as parameters relating to health and hygiene are all there was to choose from in the DCF schemes for calves and young

Table 1 On-farm welfare parameters relating primarily to health and hygiene.

Parameter	Danish Cattle Federation	Welfare Quality®	Freedom Food	Calf, Heifer, Cow Life 100
Health	X	X	X*	X
Injuries	X	X	X*	X
Lameness	X	X	X	X
Body condition	X	X	X	X
Skin condition	X			X
Claw status	X	X		X
Cleanliness	X	X		X
Air		X	X	X
Draught			X	X
Temperature		X	X	
Water		X	X	X
Feed		X	X	X
Colostrum (calves)			X	X
Milk (calves)			X	X
Floor			X	X
Risk of injuries			X	X
Management			X	X
Mortality		X		X
Culling rate		X		

* Indicators of poor environment.

Table 2 On-farm welfare parameters relating primarily to behavioural needs and emotions.

Parameter	Danish Cattle Federation	Welfare Quality®	Freedom Food	Calf, Heifer, Cow Life 100
Rising/lying down behaviour	X	X	X	X
Human-animal interaction	X	X		X
General fear		X		
Social behaviour		X		
Play behaviour (calves)		X		
Lying positions (calves)		X		
Other behaviours		X		
Abnormal behaviour		X	X	
Tethering		X	X	
Space allowance			X	X
Group housing				X
Group size			X	X
Difference in size of animals in group			X	X
Polled and horned cattle not together			X	
Stable groups				X
Bedding	X	X	X	X
One cubicle per cow			X	
Loafing area			X	
Mutilation	X	X	X	
Teat vs bucket (calves)				X
Cow brushes				X
Muzzles (calves)			X	

Table 3 On-farm welfare parameters relating primarily to natural living.

Parameter	Danish Cattle Federation	Welfare Quality®	Freedom Food	Calf, Heifer, Cow Life 100
Pasture	X	X	X	X
Outdoor access	X	X	X	X
Shade outdoors		X	X	
Shelter outdoors		X	X	
Daylight		X	X	
Cow-calf contact		X	X	
Embryo transfer		X		
Ovum pick up		X		
Genetically-modified animals		X		
Cloned animals		X		
No mammalian- or avian-derived protein in feed		X		
Variation in types of grass				X
Cattle moved to new pasture on a regular basis				X

Table 4 Venues where welfare is measured.

Parameter	Danish Cattle Federation	Welfare Quality®	Freedom Food	Calf, Heifer, Cow Life 100
On-farm	X	X	X	X
Transport			X	X
At slaughter		X	X	X

stock. However, only three of the 34 farmers surveyed suggested other parameters for calves and young stock (space, dry bedding, outside in the summer, well-being, happy looking, zest for life).

In the scheme for cows, farmers could choose between: rising behaviour; human approach test; hoof condition; injuries; lameness; body condition score; cleanliness skin condition and ‘other’. Lameness was chosen as the most important parameter of welfare by 59% of the farmers. The scheme for cows includes two behavioural parameters that are among the three most important for the welfare of the cows according to the farmers. In all, 47% of the farmers chose rising behaviour and 41% chose the human approach test. The farmers’ suggestions for other parameters for cows were bed/bedding, health and treatment of illness.

Behavioural parameters were among farmers’ preferred parameters in the scheme for cows. However, overall — for cows, young stock and calves — the farmers appeared satisfied with the focus on health and hygiene in the DCF scheme; they also seemed to find that the parameters included sufficient to measure welfare.

Comments from welfare inspectors

The welfare inspectors who carried out the DCF welfare assessments reported that there was, in certain situations, a discrepancy between their impressions of the animals’ welfare and the results of the assessments. The following

comments were made, for example, in the course of an assessment of the welfare of heifers kept in a pen with a slatted floor and a very high stocking density (Guldager personal communication 2005; Hammershøj personal communication 2005): “We were in a dark oppressive barn; the heifers were packed like sardines in a tin, and we doubted that they would all be able to lie down. From the registrations in the scheme it appeared that the heifers had good welfare” (Hammershøj personal communication 2005).

According to the welfare inspectors, heifers kept in an environment such as the one described above are often very clean in comparison with heifers housed in other ways. It would appear that the manure is trodden through the slatted floor before the animals become dirty, because the stocking density is so high (Guldager personal communication 2005; Hammershøj personal communication 2005). The welfare inspector describing the situation above would not agree that it is good animal welfare: “If animals in pens with a slatted floor are to be well, they need space to move around and there has to be room for all of them to be able to lie down” (Hammershøj personal communication 2005).

The welfare inspectors also pointed out that heifers kept on a short chain normally achieved a good result in the DCF welfare assessment scheme: “Heifers kept on a short chain normally look fine they only have injuries if they are kept directly on a concrete floor without any bedding” (Guldager personal communication 2005).

However, the inspectors do not believe that keeping heifers on a short chain is good for animal welfare (Guldager personal communication 2005; Hammershøj personal communication 2005). The beliefs of the welfare inspectors on the influence of space allowance, slatted floors and tethering on cattle welfare agree with an expert viewpoint. For example, Fisher *et al* (1997) found that a space allowance of 1.5 m² per finishing beef heifer on slats, reduced welfare, since growth and lying times were reduced at that density by comparison with allowances of up to 3 m² per animal; the animals also performed fewer interactions and had lower baseline cortisol. Dellmeir *et al* (1990) found that motivation for locomotor and other behaviours increased with a growing degree and duration of restraint on movement and decreased in response to less restrictive housing. Müller *et al* (1989) found that tethering reduced welfare by restricting movement. Ladewig and Smidt (1989) showed that stress levels are increased by tethering.

Citizens' views on welfare

Arla and DMA/Research have carried out an internal survey of Danish citizens' attitudes to Danish milk producers and methods of production (Ellegård 2001). The survey was based on telephone interviews with a representative group of the population aged over 18, numbering 402 people. The citizens surveyed were presented with a list of 24 demands to milk producers concerning issues such as quality, efficiency, environment and animal welfare. They were asked to rate the importance of the demands, as they saw them, on a scale of 1–10, with 10 representing a very important demand and 1 an unimportant demand. The citizens regarded 'Takes good care of animals' (9.5) and 'Provides good fodder' (9.3) as the most important of the 24 demands. The demands 'Lets animals graze outside' (8.7) and 'Does not leave cows tied in the barn' (7.9) were also considered important.

The effect of production on the environment was also important to the citizens, and by contrast they did not value efficient and large-scale production. This is reflected in the support expressed for the following statements: 'Displays serious consideration for the environment in his production' (9.0), and 'Accepts full responsibility for the environment' (9.0) scored high, whereas 'Is efficient in production' (5.9), 'Produces as cheaply as possible' (5.2) and 'Runs large-scale production' (4.5) were the demands the citizens considered least important among the 24 presented.

The citizens were also asked to rate 23 statements about Danish milk production on a scale from 1–10, with 1 representing statements that were not at all consistent with their point of view and 10 representing statements that were completely consistent with their point of view: 'Has an efficient production' is the statement most consistent with the citizens' point of view (7.8). 'Takes good care of animals' scored 7.2, 'Avoid keeping the animals in too confined spaces' scored 5.9, while 'Does not leave cows tied in the barn' scored 5.5.

In general, Danish citizens' perceptions of the state of Danish dairy production came in two points lower than their

demands and the citizens' level of trust in the suitability of the care provided for animals on farms is low (Ellegård 2001).

In Norway and Sweden, public awareness of, and concerns and beliefs associated with, farm animal welfare have been discussed in focus groups in the Welfare Quality® project (Pettersen & Bergman 2007; Terragni & Torjusen 2007).

In Norway, the citizens' main concerns about the welfare of farm animals in general were transport, natural living, human care and contact, and physical environment (Terragni & Torjusen 2007). Some citizens commented specifically on what they thought was good welfare for cows. We reproduce some of the relevant comments here: "I would say it revolves around the possibility for animals to live as close as possible to the way it would if it were in its natural habitat. Even though cows can be raised on a farm, there is a big difference in how it is done. You know, whether they can roam free, go into the woods, be outside all year around, go in and out when they like and have food readily available.... So as I say, it's as close to the wild animals as possible that gives the captive animal the best animal welfare" (Terragni & Torjusen 2007). "(Y)ou can see when cows are let out grazing in the summer and they jump and dance. That has to be good... It's only the first day, but anyway — animals like it" (Terragni & Torjusen 2007).

The comments appear to indicate that Norwegian citizens considered 'natural living' and outdoor access — especially access to pasture — important for cow welfare. Swedish citizens also emphasised the importance of natural living in their comments on the welfare of cows. For example: "I have written also that the needs for the different species are treated as naturally as possible. Appropriate food, water, and exposure to nature. Calves should be with their mother for the time that's natural..." (Pettersen & Bergman 2007).

In connection with farm animals in general, the main welfare concerns of Swedish citizens are transport, fodder and water, health, natural behaviour, and care.

Levels of trust in information coming from retailers, as well as producers are, in general, low among Norwegian and Swedish citizens (Pettersen & Bergman 2007; Terragni & Torjusen 2007).

Results of the comparison of the welfare schemes and the sociological data are summarised in Table 5.

Discussion

Does the DCF scheme measure factors that are relevant for welfare as perceived by other stakeholders?

A welfare assessment tool such as the DCF scheme for calves and young stock, which measures only the presence or absence of illness, injuries and dirt, seems to presuppose a very narrow definition of welfare, and one out of line with the views of academic experts on dairy cattle welfare.

As was, in fact, pointed out by the welfare inspectors, the narrow focus on health and hygiene means, amongst other things, that heifers kept on a short chain and heifers kept in high stocking densities in pens with slatted floors are categorised as having very good levels of welfare (Guldager

Table 5 Citizens' and farmers' views on welfare compared with the welfare assessment schemes.

Parameter	Danish citizens	Norwegian citizens	Swedish citizens	Danish farmers	Danish Cattle Federation	Welfare Quality®	Freedom Food	Calf, Heifer, Cow Life 100
<i>Health and hygiene</i>								
Health	X		X	X	X	X	X	X
Hygiene				X	X	X	X	X
Water			X			X	X	X
Feed	X	(X)	X				X	X
Good care	X		X					
<i>Behavioural needs and emotions</i>								
Environment	X	X	(X)	(X)		X	X	X
Tethering	X					X	X	
Human-animal relation		X		X	X	X		
<i>Natural living</i>								
Outdoor access	X	X	(X)	(X)		X	X	X
Natural behaviour		X	X			X	X	X
Cow-calf contact			(X)				X	X

(X) indicates that the finding is based on individual comments of farmers and citizens.

personal communication 2005; Hammershøj personal communication 2005).

If the welfare of the same heifers were to be assessed in the Welfare Quality® scheme, the presence of tethering, and social and resting behaviour, would be taken into account as well as other behaviours (measured by Qualitative Behaviour Assessment; Wemelsfelder *et al* 2000). Freedom Food does not allow tethering, and states that cattle must have the freedom to move sideways, to easily self-groom, rise, lie, and stretch; and must have a clean, comfortable lying area where all the animals can lie down in a normal rest posture. In Heifer Life 100, space and quality of bedding are taken into account. Consequently, it is very likely that these alternative approaches to welfare assessment would lead to the conclusion that heifers kept on short chains or in high stocking densities in pens with slatted floors, have poor welfare, or, at the very least, certain compromised aspects of welfare.

Thus, the DCF measures, with their focus on health and hygiene, are narrower than measures used in alternative welfare assessment schemes, as we have remarked. They are also narrow relative to the DCF's own definition of welfare: "Animal welfare consists of the positive and negative experiences of the animals" (DCF 2006a). Some DCF measures are admittedly connected with negative experiences: for example, lameness and injury are likely to be accompanied by the negative experience of pain, and the human approach test for cows is related to the negative

experience of fear. However, the DCF scheme includes no measures for other negative experiences, such as frustration, and no measures at all for positive emotions.

It is, however, possible to include animal-based measures of other types of negative experience by, for example, focusing on the observation of abnormal behaviours (frustration) and agonistic behaviour (fear). It is also possible to include animal-based measures of positive experiences by focusing on observations of play behaviour, social grooming, and lying behaviours indicating comfort around resting, and through qualitative behaviour assessment of the sort included in the Welfare Quality® scheme.

Another possibility — and one that may, in practice, be less costly — is to bring in resource-based measures in order to assess whether the environment allows the animals to perform normal behaviours. Measures of this kind might include, for example, whether the calves have space enough to play, whether they are kept in a group so that they can play together, whether the floor is so slippery that they avoid running even though the space is sufficient, and whether a soft and comfortable lying area is available.

Our aim here has been to argue that the DCF scheme is narrow in the sense that it only includes measures relating to health and hygiene, and a few measures relating to behavioural needs. The scheme is therefore at odds with the way influential stakeholders, involved in setting up systems for welfare assessment, view animal welfare.

The economic incentive to improve animal welfare

Implementation of the DCF scheme is voluntary and funded by the farmer. The question arises, therefore, as to whether the farmers who need it most — those with severe animal welfare problems — will take the initiative and have welfare assessments carried out. Will they be willing to pay for an assessment? If the answer is yes, will they make the changes the assessments portray as necessary in order to improve animal welfare? According to agricultural advisors attending DCF courses in welfare assessment, the answer is no. The advisors are presently unable to sell welfare assessments to the farmers, and they believe the main reason for this is that the farmers find it too expensive. The average price for a welfare assessment is DKK 3,570/€479.

Therefore, the DCF welfare assessment scheme has not succeeded in motivating farmers to improve animal welfare. This is despite the fact, mentioned above, that 80% of the farmers believe there is a positive correlation between improved animal welfare and economic benefits. If parameters relating to positive experiences, and other parameters that are not at present part of the scheme and less readily connected with economic benefits than those currently included, are added, it may become even more difficult to sell welfare assessments to the farmers.

A positive correlation between animal welfare and economic gain could be created if the farmers were offered financial bonuses for good results in the DCF welfare assessment scheme. However, only 3% of the farmers approved of this idea — at least for the time being.

Dialogue with the public

If welfare assessment schemes in livestock farming are to improve dialogue with the public, they must measure factors that are of concern to the public. Apart from health, which is a welfare concern of the Swedish citizen, the DCF scheme does not measure what actually concerns the public in Scandinavia in matters of animal welfare.

Danish citizens believe it to be important that farmers take good care of the animals, provide good feed, and let the animals graze outdoors, and that animals are not tethered. These beliefs are not reflected in the DCF scheme. Many Danish citizens believe that the animals are kept in “too confined spaces”, but space is not included in the DCF scheme.

Citizens in both Norway and Sweden are concerned about transport and natural living, yet neither factor is included in DCF's scheme. They are also concerned about human care and contact — and here the DCF's human approach test is relevant. Fodder and water provision are welfare concerns of the Swedish citizens. Such provision is not included in the DCF scheme, but body condition score is relevant to it. Physical environment and access to outdoor areas, both of which are welfare concerns among Norwegian citizens, are not included in the DCF scheme.

Of course, the farming industry could argue that what the public believes to be good or bad for animals is, in actual fact, irrelevant to animal welfare, and that therefore the public needs to listen to, and learn from, farmers and the farming industry before a proper dialogue can be established. Many of the concerns expressed by the public are, however, represented in the alternative welfare assessment schemes presented above: outdoor access, physical environment and measures of natural behaviour/natural living are included in all the welfare assessment schemes except the DCF's. Tethering is included in the Welfare Quality® scheme, in Freedom Food, and in Cow Life 100. Feed is included in Freedom Food and Cow Life 100. Transport, which is the major public concern in Norway and Sweden, is included in the Freedom Food scheme and in Heifer Life 100. See Table 5 for further details.

Finally, its voluntary implementation (which, as we have seen, discourages farmers from using it) may mean that the DCF welfare assessment scheme is not trusted by citizens to ensure that the animals live good lives on the Danish cattle farms.

Conclusion and animal welfare implications

Clearly, it is not easy to design a welfare assessment scheme which, in one stroke, improves animal welfare as perceived by key stakeholders, makes good economic sense to the farmer, and promotes dialogue with the public.

The parameters most likely to be positively correlated with economic benefits measure what is relevant to animal welfare in, at best, a limited way, if we go by what animal welfare scientists and other welfare assessing agents say. A broader scheme, including a wider range of factors in animal welfare, is likely to be better suited to improve both animal welfare and dialogue with the public. But, such a scheme could be even more difficult to sell to the farmers, because it is less likely to bring economic gains. A bonus whereby farmers are paid a higher price for milk by the dairy if they get a good result in the DCF welfare assessment scheme may, perhaps, solve this problem, but it would not have the support of farmers. If implementation of the welfare assessment is left entirely to the farmers' own initiative, no welfare assessments will be carried out, and hence the welfare assessment scheme does not improve animal welfare.

The DCF case illustrates the challenges the farming industry faces if it is to make effective use of welfare assessment schemes. Narrow measures of welfare are most likely to correlate positively with economic gains, and are most likely, therefore, to be accepted by the farmers. However, if the livestock sector is serious in its aim to ensure that animals have what would be considered, by all relevant stakeholders, a good life, and if it also hopes to improve public dialogue, it is insufficient to measure welfare in terms of the presence or absence of illness, injuries and dirt, and then leave implementation of the assessment scheme to the farmer's own initiative.

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