Content and structure of Swedish animal welfare legislation and private standards for dairy cattle

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ABSTRACT

In this study the animal welfare legislation and three private standards in Sweden, focusing on dairy cows, were analysed. The aim was to investigate to what extent these regulations consisted of resource-, management- or animal-based requirements, to analyse the content and discuss consequences. The results showed a higher proportion of management- and resource-based requirements than animal-based in all regulations. However, the borders between these categories were not as distinct as expected. The private standards put slightly more emphasis on the animal-based requirements and on animal welfare at herd level. It was primarily the organic standard that included higher animal welfare demands than the legislation. Due to vague wording and guideline statements it was not always clear if the welfare level achieved would be the same in practice although the requirements were similar. It will be necessary to clearly distinguish between requirements and measures to make the policy process more transparent.

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Introduction

The present Animal Welfare Act in Sweden was adopted in 1988. This Act, and the decrees issued by the law (available at www.jordbruksverket.se), consists of minimum requirements and shall protect animals against unnecessary suffering and disease (Swedish Government, 1988). In addition to the legislation, there are also a number of standards produced by private initiatives, such as the industry and farmer organisations (Lundmark et al., 2014). All dairy farmers in Sweden who deliver milk to Arla Foods have to comply with the standard ‘Arlagården’ (www.arla.se). Arlagården is also used in several other European countries where Arla Foods is present. Some of the other dairy farmers, delivering to other dairy plants in Sweden, are expected to comply with the private standard ‘Seal of Quality’ (http://sigill.se), and if organic they are labelled and audited under the KRAV organic standard (www.krav.se). Such standards are not legally binding but many farmers nevertheless have to comply with them to be able to gain access to the market and sell their products.

In this paper the word legislation refers to the legal system in Sweden and the legally binding legislation, that is, the written law and its decrees concerning animal welfare and protection, and the word standard refers to all other kinds of regulatory systems, such as assurance schemes, animal welfare programmes, policies, certification schemes, etc. We use the term regulations to cover both legislation and standards. Since most of the regulations in this study are written in Swedish the translations made below are our own, except for KRAV and the Animal Welfare Act and Ordinance respectively, where official translations are available.

How the requirements in a regulation are formulated can have an effect on the method chosen by the farmer to achieve compliance and also on the method chosen for audit and control. The requirements could either be expressed as animal-based or non-animal-based; the latter category can be divided into resource- or management-based requirements (EFSA, 2012b). Management-based requirements can for example be feeding regimes and handling requirements, and resource-based requirements; space allowance, type of floor, ventilation systems, etc. (Keeling et al., 2013). Animal-based requirements require observations and measures to be conducted on the animals, in vivo or post-mortem, and can either be direct indicators, like behaviour, body condition, cleanliness, etc., or indirect indicators, like records of growth, culling rate, etc. (EFSA, 2012a,b). Resource- and management-based requirements are regarded as...
‘input’ and animal-based requirements as ‘outcome’ (Keeling et al., 2013).

The animal welfare legislation is aiming at reducing the welfare risks mainly by setting up input requirements (Hultgren, 2009). This line of thought has been adopted also by initiators of private standards in Sweden (Lundmark et al., 2014). Such input factors, if they are valid and well-chosen, are important for the prevention or rectification of welfare problems (Main et al., 2003). When animals are found to be in poor condition, dirty or soiled, not able to perform natural behaviours or generally miserable, the preventive work has failed. Many studies have also concluded that the husbandry design and management routines have vast consequences for animal welfare (Veissier et al., 2004; Lidfors et al., 2005; EFSA, 2009; Kielland et al., 2010). There is, however, a risk that measuring only input requirements will not mirror the actual state of animal welfare. Animal-based output measures, which reflect how the animal is coping with its environment (Whay et al., 2003), are also needed. These can prevent a cascade of potential negative welfare outcomes (EFSA, 2012a). Disadvantages with animal-based requirements are that they can be time consuming and costly to measure (de Vries et al., 2013), require a lot of training to perform (EFSA, 2012b), and implies a risk of limited inter- and intra-observer reliability (Bokkers et al., 2012), compared to input requirements (EFSA, 2009; Keeling et al., 2013).

However, during the last decades there have been discussions about developing and introducing more animal-based requirements and measures (Keeling et al., 2013), and the EU Commission have stated that they will consider the feasibility and the appropriateness of introducing science-based indicators based on animal welfare outcomes as opposed to welfare inputs as has been used so far (European Commission, 2012).

Animal welfare is important for European citizens (European Commission, 2016), and a large amount of resources are invested in creating regulations and control systems, both governmental and private initiatives, related to farm animal welfare. All these systems will also incur costs in time and money for the farmer. Still, there is very little research on the content and structure of such regulatory systems, which is necessary if they are to be evaluated. Based on statements from stakeholders and policy-makers an up-coming shift from non-animal-based towards more animal-based requirements can be expected. Before initiating such a process it is important that policy-makers are duly informed about the structure and content of legislation and standards already in place. Otherwise, there is a risk of involuntary losing valuable concepts during this transition.

**Aims and hypotheses**

The aim of this study was to analyse different sets of Swedish animal welfare regulations, including any corresponding control guidelines, regarding animal-, resource- and management-based requirements for dairy cattle and to analyze the actual content of the regulations at the general overall level; that is, in which areas do they have common requirements and in which areas do the requirements differ? This analysis includes elaboration on possible practical consequences for animal keepers, the legislative and policy-making authorities/organisations and the potential animal welfare level at the farms and ethical aspects of the chosen content and structure. Our main hypotheses were that (a) the focus in the regulations is on resource- and management-based requirements, (b) there are guidelines available that enable good inter- and intra-observer agreement, (c) the measures suggested in the corresponding guidelines mirrors the requirements and (d) there is enough transparency and predictability for the farmer in knowing what the requirements mean and how the inspectors and auditors will assess and measure compliance.

**Materials and methods**

Four Swedish regulations were analysed: the national animal welfare legislation and the animal welfare-related sections of Seal of Quality (dairy cows, edition 2011:1), Arlagården (version 4.0) and the organic standard KRAV (edition 2013). The pieces of legislation were the Animal Welfare Act (1988:534) (AWA), the Animal Welfare Ordinance (1988:539) (AWO) and the Swedish regulation and general recommendations on animal husbandry in agriculture (SJVFS 2010:15, latest amendment in SJVFS 2012:13, Case No L 100) (L100). We focused on the animal welfare requirements related to on-farm housing and management of dairy cattle, including calves. For an analysis of intentions and values behind the regulations, see Lundmark et al. (2014). Some requirements in the legislation and the KRAV standard originate from EU legislation and the International Federation of Organic Agriculture Movements (IFOAM) norms for organic production. However, we did not analyse the EU legislation or IFOAM further.

The method used in this study was the qualitative ‘content analysis’ (Hsieh & Shannon, 2005). Initially, we used a ‘summative’ content analysis were we quantified the areas of content in the different regulations by organising all requirements from the four regulations by headings in the legislation, to make it possible to compare the content between the different regulations; that is, requirements from the different regulations that
concerned the same area were given the same heading. The headings were general basic rules, daily care, space allowance, fittings and equipment, stable climate and air quality, lighting and noise, feed and water, cleaning routines, pasture and paddocks, outwintering animals, handling and coercion, pre-approval of farm buildings, surgical procedures, use of drugs, and breeding. One more heading was added; preventive health work, since the private standards put more emphasis on this and this heading were lacking in the legislation. After comparing the content we analysed each requirement and classified it, based on all text fragments, as animal-, resource- or management-based, or as a combination, This kind of ‘directed’ content analysis is a suitable tool when certain theories are already present as a result of prior research (in this case the fragmentation of a regulation into animal-, resource- and management-based requirements), and when these theories will benefit from further descriptions and analysis (Hsieh & Shannon, 2005). Finally, we analysed any corresponding control guidelines, when available, applying the same classification system as described above (animal-, resource- or management-based, or as a combination), plus the suggested method of measuring, that is, what kind of assessments that were suggested to each requirement. The analysis of the guidelines hence focused on both the corresponding regulation, and on clarity and conspicuousness. The descriptive statistics were calculated in Excel (Microsoft Excel, 2010).

Results

The legislation consisted of more detailed and specific requirements than the private standards. According to our fragmentation the legislation consisted of 145 animal welfare paragraphs for dairy cows, including calves. The corresponding numbers for the private standards were 81 in KRAV, 67 in Seal of Quality and 53 in the Arlagården standards respectively. The legislation and Arlagården had guidelines linked to the regulations to facilitate the inspectors’/auditors’ assessments, covering almost all requirements. These guidelines described how a requirement should be checked by the inspector/auditor. Arlagården also included definitions of compliance. Seal of Quality had written guidelines to some of their requirements whereas KRAV referred to calibration meetings between certification bodies only.

Animal-, resource- or management-based requirements

Of the paragraphs classified, the legislation contained the highest proportion of pure resource-based requirements, that is, related to the availability of resources in the animals’ environment, for example ‘Minimum dimensions of single pens are …’ (L100, chapter 2, section 36) (Table I). Arlagården contained the highest proportion of pure management-based requirements, that is, related to actions required from the animal keeper, for example, ‘The cowsheds shall be properly cleaned at least once annually’ (Arlagården 365). Both the legislation and the private standards had a low proportion of requirements that were purely animal-based, that is, focusing only on the appearance of the animals, for example, ‘The dairy cows should be in an appropriate body condition’ (Arlagården 213).

Several paragraphs were classified as a mixture of two or all three categories (Table I). An example where a paragraph consisted of requirements related to both management and resources is ‘Every day, animals shall get feed of suitable structure’ (L100, chapter 1, section 28). When the requirements covered a mixture of two categories the most commonly identified combination was resource- and management-based in all four regulations (Table I). In general, animal-based requirements were more commonly expressed in a mixture with other requirements than alone. KRAV had the highest proportion of requirements that contained all three types, for example, ‘Lying areas shall provide comfort for the animals and be managed so that the hygiene is good’ (KRAV 5.6.3). As a result of this mixing, resource-based requirements were found in a total of 64% of the paragraphs in the legislation, which also had the highest proportion of paragraphs containing resource-based requirements (Figure 1).

A certain requirement may also be expressed in different ways but in the end still be possible to measure or evaluate in the same way. For example, the legislation

| Type of requirement | Legislation (%) | KRAV (%) | Seal of quality (%) | Arlagården (%) |
|---------------------|----------------|---------|---------------------|---------------|
| Pure resource-based | 35             | 17      | 19                  | 11            |
| Pure manage-based   | 23             | 30      | 28                  | 40            |
| Pure animal-based   | 0              | 1       | 1                   | 4             |
| Resource- and       | 13             | 22      | 21                  | 17            |
| management-based    |                |         |                     |               |
| Resource- and       | 9              | 4       | 3                   | 13            |
| animal-based        |                |         |                     |               |
| Animal- and         | 6              | 6       | 15                  | 11            |
| management-based    |                |         |                     |               |
| Resource-,          | 7              | 14      | 6                   | 2             |
| management- and     |                |         |                     |               |
| animal-based        |                |         |                     |               |
states that ‘Animals shall be kept satisfactorily clean’ (L100, chapter 1, section 7), a requirement that could be seen as a mixture of management- and animal-based requirements. In Seal of Quality it says that ‘Animals shall be clean’ (Seal of Quality 17.4 M), a requirement that when expressed in this way was classified as purely animal-based.

Discrepancies between the regulations and their corresponding guidelines

Some requirements were expressed in one way in a regulation but suggested to be controlled in other ways according to the corresponding guidelines, for example, according to the legislation ‘Animals should be attended to at least once a day’ (L100, chapter 1, section 5), a management-based requirement. However, the corresponding guidelines also recommend checking animal-based measures such as animal cleanliness or untreated injuries, which would indicate failure of proper attention, and resource-based measures ensuring that the facilities enabled all animals to be attended to without difficulties. As shown above (Figure 1), the legislation consisted of 64% resource-, 49% management- and 22% animal-based requirements. However, the corresponding guidelines covered 84% resource-, 76% management- and 40% animal-based measures. Hence, the measurements used during audits were generally more complex than indicated in the regulation paragraphs.

We also noticed that requirements can be expressed quite imprecisely, leaving the consideration on compliance or not entirely to the inspector, for example, ‘Animals shall be kept satisfactorily clean’ (L100, chapter 1, section 7) and ‘Animals must be able to live with dignity’ (KRAV 5.1.1). The guidelines to Arlagården and Seal of Quality did draw a more precise line than the guideline to the legislation in relation to when the cows were to be considered as being too dirty, too thin or emaciated according to their standards. In contrast, the guidelines to the legislation referred to existing animal-based scales but did not specify a precise threshold in relation to what would be acceptable or not.

Similarities and differences between legislation and private standards

All milk producers in Sweden shall, of course, comply with the animal welfare legislation, and this fact was also declared in all three private standards. Nevertheless, the private standards partly covered the same requirements as the legislation, and all regulations had fundamental requirements about good animal environments and proper care and management of the animals to ensure good general condition, clean and healthy animals. All regulations had requirements under most of the headings (i.e. areas of concern). However, due to the less detailed regulations and fewer requirements, the private standard did not always have such specific requirements as the legislation. Requirements about dimensions (e.g. space allowance/stocking density), were present in the legislation but not included in the private standards, with some exceptions for KRAV. Compared to the legislation, the private standards contained very few requirements about interior design and equipment. The legislation and, in particular, KRAV emphasised the importance of natural behaviour, by using this precise term in their requirements.

Sometimes it was not clear if the requirements in the regulations were practically identical or whether there was a difference. For example, according to the legislation ‘Stall floors and cubicles … shall be provided with adequate bedding of straw or similar material’ (AWO section 16), according to KRAV ‘You must use generous amounts of litter’ (KRAV 5.6.3), and according to Seal of Quality ‘Enough straw should be given’ (Seal of Quality15.2M). Hence, all regulations required straw – but to the same extent, or does the difference in wording indicate a true difference in what is actually required?

A vast majority of the requirements for dairy cows in Arlagården and Seal of Quality were at the same level as the legislation. It was mainly KRAV that had higher, or at least different, animal welfare requirements, for example, when it came to pasture and outdoor access for the animals. Common for all private standards, in contrast to the legislation, were that they did explicitly forbid the producers to keep animals of the breed Belgian Blue. Furthermore, they required loose-housing systems to be used not only when building new barns but also after
any extensive renovations of existing cattle stalls. The most obvious difference between the standards and the legislation were the requirements/recommendations in the standards about farm affiliation to various advisory programmes, such as the ‘Swedish official milk recording scheme’ (Växa Sweden, 2014a), ‘Ask the Cow’ (Växa Sweden, 2014b) or ‘Animal Welfare Signals’ (Växa Sweden, 2014c). The legislation did not include any such requirements, as participation in these programmes is legally voluntary.

Discussion

Focus on resource and management (hypothesis a)

As expected, the regulations in our study all predominantly consisted of resource- and management-based requirements. However, all regulations also involved a number of animal-based requirements, and we found that there was often a mixture of the categories in the same requirement or paragraph. It was sometimes difficult to differentiate management- from resource-based requirements, when a regulation addressed a requirement directly to a person, that is, the stock-keeper who is responsible for providing the resource. In our classification, we made a distinction between requirements that stated what a stock-keeper needed to do on a daily or regular basis for the animals, and requirements that stated what basic conditions (resources) a person needed to provide the animals with. The main difference between these two are the kind of investments needed for achieving compliance, that is, resource requirements often call for investments in infrastructure and equipment, whereas management requirements demand investments in time and salary.

The structure of the regulations was complex and any statement about them being mainly non-animal-based tends to over-simplify the situation. Animal-based requirements were not absent in any of the regulations, and the guidelines clarified that some requirements should be assessed using both animal-based and non-animal-based measures. The private standards put slightly more emphasis on animal-based requirements than did the legislation. Since the legislation applies to all holdings, private policy-makers can chose to leave out resource requirements, such as minimum pen sizes, and still find them implemented as a result of the legislative requirements. According to Main (2009), animal-based assessments are especially suited for inclusion in private standards, giving benefits to producers (useful management information), consumers (improved delivery of animal welfare assurance), industry (maintaining a competitive position for the country) and in the end also the regulators (increased likelihood that the legislation is complied with if a farmer is affiliated to a private standard). On the basis of our results and in accordance with other studies (Rushen & de Passillé, 2009; Keeling et al., 2013), it is important to stress the difference between prescribing preventive input requirements (with a purpose to reduce the welfare risks) and identifying and applying various measures to assess the actual welfare outcome.

The existence of guidelines (hypotheses b and c)

We discovered that the measures suggested in the guidelines could be substantially more complex than the actual requirements. According to EFSA (2012a), the exact formulation of a requirement should determine what type of measure (resource-, management-, or animal-based) to use. This proved, however, not to be the case in our study. Even if the measures included usually mirrored the requirements, that is, the measures were relevant and covered the expected aspects, they were not necessarily of the same category (resource-, management-, or animal-based) as the corresponding requirements. The legislation and Arlagården had the most comprehensive written guidelines. Arlagården’s guidelines often clarified exact definitions of compliance, for example, when the cows are clean enough, using assessment scales and checkpoints. The guideline to the legislation was more reasoning and gave examples of other assessment scales to use, but did not always define how these scales should be interpreted in relation to the legislation. Inter-observer agreement can be difficult to reach when there is no single standard protocol (scoring system) to use when assessing animal welfare (Schlageter-Tello et al., 2014).

All regulations in our study contained requirements that were vague; leaving it up to the stock-keeper to interpret and inspector to assess and decide what is ‘good enough’ or ‘satisfactory’. McEachern and Tregear (2000) saw that also standards in the UK often described welfare measures in vague and unquantified terms. The guidelines were helpful in the process of interpreting some of these more unspecific concepts but not all of them, which means that there is an obvious risk for low intra- and inter-observer agreement, which may indirectly decrease the validity of the indicators chosen. When the interpretation of a regulation is depending on guidelines there is also the question as to whether the stock-keeper has access to these documents, especially if there are additional requirements and measures introduced in the guidelines that have not been clearly stated in the regulation, as was sometimes seen in our
study. However, the guidelines to the regulations in our study were all available to the farmers.

**Same requirement, different measures – the example of individual or herd level**

Even if requirements were thought to be the same between the regulations, that is, formulated in the same way, it can be discussed if this was the case when the guidelines are suggesting different ways of measuring. For example, in general, the regulations in this study reflect the view that animal welfare concerns the state of the individual animal. This was especially clear in relation to the legislation where the guidelines stated that; ‘Even if only one animal is affected by poor welfare this requires appropriate measures to be taken, since the animal welfare legislation is written with a perspective of an individual animal’ (Jordbruksverket, 2013). Seal of Quality and Arlagården showed a slightly different approach. Even if the standards required every animal to be cared for by the stock-keeper and checked upon during a control visit, it was sometimes stated that non-compliance should not be reported until a certain proportion of the animals were affected (e.g. a certain number of dirty or soiled animals). Hence, even if similar requirements were stated, differences were found as to when compliance was considered to be achieved or not, depending on if the assessment was made at individual or herd level. However, an animal in poor condition does not suffer less just because the assessment at farm level indicates an overall high welfare level. There will be implications for the welfare of an animal if it is thought of as an individual or not, but both individualistic and non-individualistic approaches can be useful when developing policies (Yeates, 2013). Nevertheless, if a given private standard only assesses animal welfare at herd level, there is a risk that this standard does in fact offer a protection level below the legislative level with respect to the individual animal. For a more thorough analysis of the consequences of measuring at an individual versus herd level, see Lundmark et al. (2015).

**Predictability and transparency (hypothesis d)**

Unspecific wordings and vague concepts in a regulation increase the risk that different opinions will evolve about how to interpret and implement these in practice (Lundmark et al., 2013; Schindler, 2013). If there is no well-defined regulation, guideline or assessment protocol there is a risk that the inspectors’ attitudes and values will affect the assessment, all believing they have made the correct interpretation (Mullan et al., 2011). There may also be goal conflicts and inconsequence between the different pieces of legislation (Gerritsen, 2013; Lundmark et al., 2014). For example, the first level states that animals should be protected from suffering, while the second level still allows some obviously painful procedures, for example, castration without anaesthetics. Wahlberg (2011) concluded that Finnish authorities mainly audited the second level, that is, the more detailed legislation, and did not reflect over the intentions stated in the general law. Most likely, Finland is not the only country handling the issue in this way, as intentions are difficult to audit.

In order to achieve legal predictability, requirements need to be clearly stated in line with the aim of the law. The legal system demands an authority decision to be completely clear, so that the stock-keeper knows when compliance is reached (RÅ, 1994). Private standards are not part of the legal system and do not have the same requirement of transparency. However, the private standards in this study were all trying to create security for their affiliated farmers, as they had created systems to make it possible for farmers to appeal a decision to the next level within the private organisation owning or managing the standard. Even if private standards are not a part of the official animal welfare control per se, they have an influence on the official system since the result from a private audit can be a part of the risk classification system and thereby influence the frequency of official controls at a farm. For the individual farmer, who can have both legislation and private standards to comply with, it is of course of utmost importance that the meaning of a certain requirement is clear, and if similar requirements in different regulations are aiming at the same or slightly different actions. Since this was not always clear in the regulations covered by our study there is a risk of non-transparency and poor predictability to know what the requirements mean and how the inspectors and auditors will assess and measure compliance both within and between regulations. This also has an impact on the farmer’s legal protection.

**Conclusions**

A regulation will have a large impact on the way animals are treated and managed, since it regulates the minimum housing conditions and animal welfare levels acceptable in society. In this study most of the requirements were input-based, in the animal welfare legislation as well as in the three private standards, a finding that was not unexpected since the regulations all had a preventive focus and purpose. More surprisingly, not all regulations had corresponding guidelines, which may hamper the inter- and intra-observer agreement. The
existing guidelines did mirror the requirements quite well. However, the way a requirement was formulated was not necessarily the same as how it was to be measured; that is, if the focus was on input or outcome measures or on individual animals or group level. There is a risk that it is not enough transparency and predictability for farmers in knowing what the requirements mean and how the inspectors and auditors will assess and measure compliance both within and between regulations. In the future more focus need to be put on the measures in order to make the policy process more transparent. The requirements in a regulation are often communicated with stakeholders and society before they are decided upon, unlike the control guidelines and checklists, which actually set the animal welfare limits.

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