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# What kind of nature we are talking about? How animal and agricultural science experts assess consumer demand for more connection with nature in German dairy farming

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## ABSTRACT

Dairy farming has been the subject of public debate on animal welfare for a number of years now. Animal welfare discussions on dairy farming often include the demand for more nature connectedness in this area. This study focuses on the divergent perspectives of consumers and scientists on the importance of more nature connectedness for animal welfare strategies in German dairy farming. Within Europe, Germany is the main producer of cow's milk and an important industry in many rural areas in Germany is dairy farming. The insights presented are based on qualitative interviews with dairy farming and livestock researchers from Germany and Austria. A key finding of this study is that we need to look more closely at the actual content of nature claims in animal welfare debates. The scientists interviewed tend to see idealized conditions in animal welfare discussions with images of nature which in fact seldom lead to improved conditions in dairy farming and, even then, only to a limited extent. The scientists interviewed rate calls for more nature connectedness in dairy farming from the nonagricultural public as anti-modern, complexity-reducing, and normative. Nevertheless, some of the scientists interviewed did have valuable insights into the nonagricultural public's criticism of dairy farming practices. These scientists argued, however, that animal welfare needs to differentiate between nature connectedness and the innate needs of cattle when it comes to animal welfare strategies. An important conclusion of the study is that more discussion formats are needed to promote the exchange of ideas between different social groups attempting to understand animal welfare in dairy farming.

**Keywords:** *Animal welfare; natural living strategies; German dairy farming; expert interviews.*

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## 1 Introduction

The present paper is a case study focusing on the animal welfare debate around the German dairy farming sector. In 2020, a total of 33.2 million tons of milk was produced in Germany. Within the European Union, Germany is the largest producer of cow's milk, with around 20 percent of EU cow's milk produced there (BMEL, 2020a; DBV, 2021). In economic terms, dairy farming is the most important branch of German agriculture. This is where the highest production values are generated—over 10 billion euros annually (BLE, 2021; FAZ, 2022). Dairy farming continues to shape German agriculture despite ongoing structural changes and a declining number of dairy farms: one farm in four is still a dairy farm (Thünen Institute, 2021; FAZ, 2022). Consequently, it is clear that dairy farming has a very significant impact on rural areas in Germany. From both a German and a European perspective, developments in German dairy farming are highly relevant both socially and economically.

However, the per capita consumption of cow's milk in Germany is falling (by 4.4 percent from 2020 to 2021). In the same period, the consumption of plant-based milk alternatives increased. This correlation suggests that cow's milk is losing popularity in Germany despite the widespread practice of dairy farming (BMEL, 2022). Agro-scientific studies and reports to date indicate that the German dairy farming sector should focus more on animal welfare in the future. They emphasize that the animal welfare situation in German dairy farming appears to be inadequate at present. Moreover, dairy products seem to be losing popularity in Germany as a result of this criticism of the animal welfare situation (WBA, 2015; Dauermann and Kussin, 2020; Ivica et al., 2021, Christoph-Schulz et al., 2015; Gaulty, 2015). These developments in German dairy farming coincide with larger trends in attitudes towards livestock farming in western industrialized countries: people in these countries are increasingly critical of agricultural livestock farming in general (Korthals, 2005; Voerste, 2008; Vanhonacker and Verbeke, 2014).

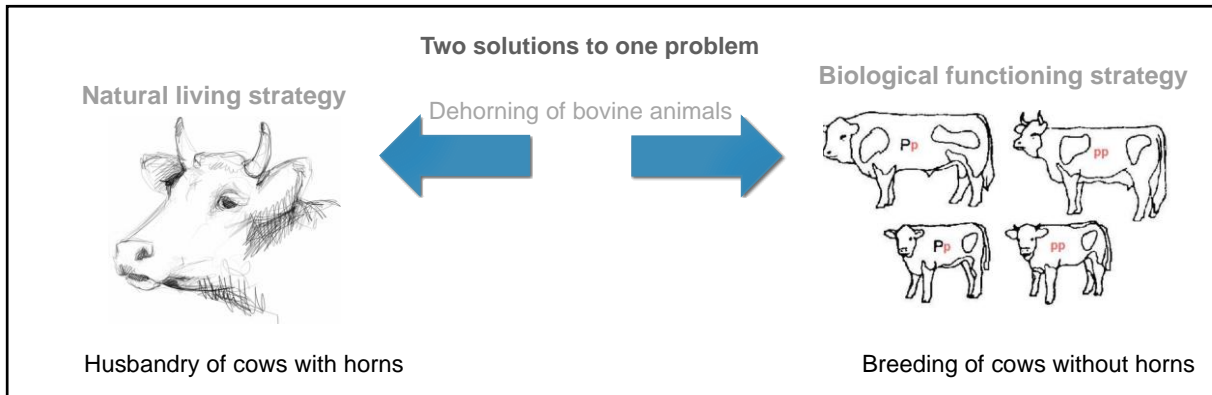
German politicians are attempting to react to problems in dairy farming concerning animal welfare. The German Federal Ministry of Food and Agriculture is currently supporting the restructuring of German dairy farming to promote animal welfare. The ministry is planning to divide the quality of animal husbandry into four levels in relation to animal welfare, with Level 1 corresponding to a low level and Level 4 to a high level. The legal guidelines for animal welfare are still below Level 1 at present. By 2030, all farms should keep their animals at least within the scope of Level 1. From 2040, Level 1 will be dropped and the minimum requirements will be Level 2. German agricultural policy aims to raise the level of animal welfare in livestock farming in the long term (BMEL, 2020b).

However, it is unclear to what extent societal expectations lead to indicators that actually improve animal welfare in German dairy farming. Within animal welfare debates, trends have been moving in several directions for many years now. One societal camp focuses on the affective states (the emotional states) of animals, while others concentrate on animal farming strategies with more nature connectedness (natural living strategies). Yet another camp emphasizes basic health and function (biological functioning strategies) (Fraser, 2008; Cardoso et al., 2019; Ritter et al., 2021). People who work as farmers or agricultural veterinarians usually prefer biological functioning strategies: for them, health is often the main focus of animal welfare (Fraser, 2008; Ritter et al. 2021). Outside the agricultural sector, there is a stronger tendency toward the natural living strategies. (In the following paragraphs, the term “consumer” is used to represent the section of society that is mostly not professionally involved in agriculture. These people influence farming through their purchasing decisions and their political views.)

Consumers without professional involvement in the agricultural sector are increasingly demanding more connection with nature in dairy farming and livestock production (Spiller et al., 2016; Cardoso et al., 2019; Boogaard et al., 2011). At the same time, there is much irritation caused by and discussion involved with this demand (Prickett et al., 2010; Christoph Schulz et al., 2015; Heise and Theuvsen, 2016). For consumers, the concept of animal welfare is often determined by the alleged natural living framework (Boogaard et al., 2011; Fraser, 2008; Verbeke, 2009). For instance, a lot of people assume that cows live naturally on grasslands and eat pasture grass and so indoor animal accommodation systems without grazing are less acceptable to them (Weinrich et al., 2014; Schuppli et al., 2014). Also, separating cows from their calves after birth is viewed critically by many consumers because it seems unnatural (Busch et al., 2017; Ventura et al., 2013).

The issue of dehorning is another example in the animal welfare debate about natural solutions versus technical solutions. The previous practice—burning out horns—is a painful experience for calves. The disadvantage of horned cattle is the risk of injuries caused by competitive fights which can lead to flesh wounds and bloody milk. Competition for feed among cattle with horns is also a serious issue. There are, however, several approaches to improving this situation. One is to stun the calves before the horns are burnt out. In fact, there are two further different courses of action that eradicate the need to burn out horns. One is the path of naturalness and the other is the path of technological progress. One group of animal activists is calling for the cows to be kept physically intact and natural and, consequently, they advocate banning dehorning. Accommodation systems then need to be geared toward coping with

horned animals. Others are in favor of breeding cows without horns and thus eliminating the disadvantages of horned cows (see Figure 1 below) (Gauly, 2015; Johns et al., 2020).



**Figure 1.** Natural solutions versus technical solutions in the animal welfare debate: dehorning  
(Source: Our own depiction following Gauly (2015) and Johns et al. (2020)).

Consumer preference for nature connectedness is reflected in the increasing popularity of organically produced foods. For instance, organic milk sales in Germany increased by 15.6 percent in 2020 (Milchindustrieverband, 2021).<sup>1</sup> For producers and consumers, nature connectedness is an essential characteristic of organic farming (BÖLW, 2021; Verhoog et al., 2003; Verhoog et al., 2007).

In light of the existing conflict concerning animal welfare, it is of particular interest to what extent a closer connection to nature in dairy farming practice is needed in order to improve the situation. Consequently, the present study aims to reflect the importance of more nature connectedness in animal welfare strategies through interviews with scientists with expertise in animal welfare in dairy farming. The findings of this research design are important for the holistic success of the animal welfare debate. This study aims to make a reflective contribution to this controversy. It will also examine how science can contribute to further discussion and progress on animal welfare in the future.

## 2 Background

The following sections of the text are intended to characterize the discussion around the subject of nature connectedness in food production in general.

Regarding what is commonly known as the nature-culture border, the literature indicates that there are opposing social currents. The point here is whether living circumstances are natural or influenced by humans. As far as food production is concerned, a closer connection is often called for. This means that processes of food production should be aligned to allegedly natural conditions since people are often rather skeptical of technical approaches in agriculture (Román et al., 2017; Dürnberger, 2019).

The discussions about green genetic engineering are a striking example here and, consequently, there are complex normative discussions in this field. An important point is that direct interventions in the genetic material of plants or animals are considered to be unnatural and are therefore rejected by opponents of genetic engineering (Dürnberger, 2019; Gregorowius, 2008). These discussions about green genetic engineering are also models for further controversies about food production and agriculture. Over time, discussions about genetic engineering have shown their observers that they also involve values and theological perspectives—not only technological opportunities and risks (Dürnberger, 2019). This can be explained by the changing image of nature among those contributing to debates on green genetic engineering. In the past, nature was often perceived as a danger. This is often no longer the case today. Instead, many people now appreciate nature's resilience. As a result, attempts to reshape and mechanize nature are more strongly rejected and there is a greater desire for recreational activities in the wilderness. These concepts of wilderness act as an antithesis to the accelerated and consumption-oriented lifestyle of modern civilization according to the findings of one study (Piechocki, 2010; Dürnberger, 2019).

<sup>1</sup> Consumption situation with cow's milk before the war in Ukraine and rising inflation.

Furthermore, in the Netherlands and France, it is common knowledge that people living in increasingly urban areas perceive the functional context of rural areas less and less. For instance, things like rural food production are seen less and also appreciated less. Instead, people with an urban lifestyle are increasingly accessing the countryside with notions of romance and wilderness. This is a development that has been apparent since the 1990s. In this context, agriculture is also viewed more and more nostalgically, with modern agriculture often leading to feelings of loss from the urban viewpoint (Buijs et al., 2006; Haber, 2010). Corresponding studies from neighboring Western European countries may well shed light on how social developments are shaping their perception of agriculture in Germany. Furthermore, it is well documented that landscape changes tend to be rejected by the population since the reinterpretation of landscapes represents a cognitive and emotional challenge for humans (Kühne, 2013).

With regard to dairy farming, there are indications that questions of acceptance are similar to those seen in the field of green genetic engineering. In dairy farming, too, a change in the relationship with nature over the last few decades seems to have had an impact on levels of acceptance. A study with reference to the Dutch population found that the population group aged over 65 years (Survey in 2011) is the most likely to accept modern forms of dairy farming. Younger people, on the other hand, want more closeness to nature and tradition in dairy farming (Boogard et al., 2011). These findings show that it makes sense to reflect on the consumers' understanding of agriculture, nature, and the landscape. It turns out that people's views of nature have an effect on attitudes towards agriculture. Furthermore, sociological and demographic effects need be included in research on the subject.

### 3 Methods

As this study focuses on understanding the meaning and relevance of "nature" as a concept for animal welfare, a qualitative research design was used. Qualitative research is particularly well suited to identifying social realities and cultural frameworks (Flick, 1996). According to Bitsch (2005), qualitative research is predestined to open up different perspectives and stakeholder views. The analysis of the present study is based on the evaluation of seven qualitative interviews conducted with researchers in dairy science, farm animal ethics, and veterinary medicine (one expert with a veterinary science background, one with a combined veterinary and agricultural science background, two experts in farm animal ethics, and three experts with an agricultural science background).

Stakeholder analysis pinpointed interview partners from Germany and Austria with experience and know-how in the field of German dairy farming and in-depth knowledge of animal welfare issues. A dairy branch expert from the German Federal Agricultural Research Institute (Johann Heinrich von Thünen Institute) and a dairy industry expert from the Humboldt-Universität zu Berlin (German university conducting agriculture science research) were involved in the stakeholder analysis in order to identify suitable experts. Austrian scientists were taken into account if they conducted research relating to the German dairy sector or had recently worked in German research institutions. All researchers had been involved in animal welfare research related to the dairy sector in the recent past.

The face-to-face interviews were conducted with the support of a guideline on animal welfare assessments related to the German dairy farming sector. The interviews were initially designed in such a way that the interviewees expressed their perspective on the subject of animal welfare in dairy farming and were able to explain animal welfare in dairy farming in a free narrative manner with topics being independently weighted. During the interviews, the issue of importance of a connection to nature for improving animal welfare in dairy farming was elaborated if it had not been sufficiently explained beforehand. The interview length varied between 60 and 120 minutes. The interviews were audio-recorded and transcribed.

The evaluation method used was qualitative content analysis in line with Mayring (2015). First, the transcribed interviews were structured (coded) and relevant statements were identified. Relevant text passages of the interview material with a similar contextual relevance were grouped together. This was followed by generalization steps, which finally led to conceptual considerations. The main categories of the structuring and analysis process were the following themes: conceptions and associations of nature, importance of domestication, innate motivations/needs, and integrity. The coding plan was created before the evaluation with reference to the interview guidelines and prior knowledge. While structuring the text material, existing codes were refined. The MAXQDA program supported the structuring process of the text material. The stability of the measurement (of text structuring) was reinforced by the use of a second coder. This coder coded parts of the research material for comparison purposes.

### 4 Results

The evaluation of the expert interviews shows that the researchers interviewed almost unanimously delegitimize the consumers' view of animal welfare. They do this by classifying their idea of nature in this context as normative, subcomplex, and anti-modern. The researchers interviewed also demonstrate an understanding of consumers' criticism

of current dairy farming. They recognize the animal welfare deficits but see them as less justified by a lack of connection with nature in German dairy farming.

#### 4.1 The normative concept of “nature”

According to the experts, consumers often compare nature with ideal conditions for animal welfare. The absence of human influence would be assessed positively in this context with regard to animal welfare.

*“Nature is not in the animal welfare association. But that is not the end of the story, there’s something else in this debate about naturalness, namely a normative idea of how to shape human-animal relationships and the idea of naturalness provides a projection surface for debates about how we understand animal welfare for example [...]”.*

The scientists interviewed see parts of the naturalness argument in current animal welfare discussion relating to agriculture as a binary killing argument. More often than not, this would not be followed by constructive discussions on real animal welfare issues. These scientists perceive the naturalness argument in a way that they cannot counter with complex arguments. In these debates, the naturalness aspect is given a self-worth that overshadows other aspects.

*“That is also a killer argument, that is unnatural.”*

The experts participating in our study also felt that it was essential not to be too quick to equate the terms naturalness, species justice, and animal welfare. This approach would lead to major contradictions if we were to see things in practice. It was repeatedly stated that naturalness also involves critical issues such as food shortages.

*“[...] if we think about this consistently to the end, then we have to say that it is also a species-appropriate thing to starve animals. So, in a severe winter, all wild animals suffer, mobilize body mass on a large scale, and some die from this.”*

#### 4.2 The anti-modern concept of “nature”

Some of the experts concluded that without an agricultural background, consumers would intuitively have the feeling that there are generally issues related to animal welfare on dairy farms. This would often lead to a comparison with the living conditions of cattle in a natural environment. However, within these comparisons, nature is often idealized or consumers’ knowledge of natural processes is insufficient. Beyond that, the arguments of naturalness advocated are backward-looking and hostile to modernity according to our experts. Technical developments and innovations would hardly find acceptance among critics of dairy farming in this tense environment. One opinion established in the interviews was specific: this hostility to modernity is a difficult starting point for real progress in animal welfare in agriculture.

*“In the debate, the concept of nature often stands for a return to a golden age when everything was still good and, of course, in my mind, that is the most unsuitable means for agriculture to think about improvements or innovations [...]”*

#### 4.3 The undercomplex concept of “nature”

In addition, some experts believe that as a result of the domestication of farm animals, their welfare requirements are no longer tied to a natural environment. Comparisons with nature would therefore not be appropriate, leading to the conclusion:

*“[...] the fact that we have had domesticated livestock animals for thousands of years shows that this is not natural anyway, but rather this whole husbandry system, so to speak, is shaped by the fact that humans talk about, define, or create framework conditions in which animals are kept and in which animals be bred. That means, even if one were to say that one generally finds a naturalness criterion unproblematic, then it is conceptually problematic to speak of more natural and less natural forms of husbandry for something like livestock farming.”*

In addition, opinions were expressed in the qualitative interviews that human care was important for animal welfare. In nature, diseases and predators would limit animal welfare. However, the general public’s view of nature often fails to take account of these negative aspects and their impact on animal welfare.

*“From an evolutionary point of view [...] cattle come from the steppe, and therefore have manifold adaptation reactions. However, if protective measures are not taken in animal husbandry, as with natural husbandry, the compensation mechanisms, the adaptation reactions, are overtaxed and the animals suffer. So even in a natural environment, the animals suffer depending on the weather, depending on the predators, etc. [...] If you have this information [...], I think you would also have a slightly different view of the natural farming environment than is sometimes held in public at the moment. When it comes to maintaining health, when it comes to animal welfare, then human care has a lot to offer.”*

#### 4.4 Demonstrated understanding of the emergence of the concept of nature

Conversely, there were experts who said that livestock animals have some innate motivations despite domestication which are probably not satisfied by husbandry as currently practiced.

*“I think it has nothing to do with domestication, yes or no, and we can forget this aspect of naturalness with domesticated animals because it is no longer the original form, so to speak, and has been changed anyway. But that has nothing to do with the fact that there are still motivations amongst farm animals, innate behaviors—that one can and should also follow.”*

The scientists interviewed also see the issue of integrity in the context of the natural debate. Scientists assume that agriculture tends to over-adapt livestock animals in some cases. This aspect is criticized. Here, the naturalness arguments of the public are justified—in the scientists’ opinion. In particular, copying body parts was called into question:

*“If by naturalness we also understand the question of integrity, i.e., horns, yes or no, interventions on animals, yes or no, then I think that is also a thoroughly relevant aspect that has more of a philosophical component, precisely this question of integrity, but it is absolutely legitimate to at least ask the question of what justification we actually have to remove parts of the body of animals. How do we actually come to adapting them to our posture conditions, so to speak, and I also find that a legitimate question, and, in my eyes, the integrity should be preserved as much as possible.”*

#### 4.5 Considerations of consumer acceptance

Further into the interview series of this study, one perspective revealed was that the experts are aware that purely scientific indicators on animal welfare are currently insufficient to resolve acceptance conflicts relating to dairy farming. In this context, there are considerations not only to orient livestock husbandry toward animal welfare indicators but also toward the wishes of consumers. The experts came to the conclusion that animal welfare and consumer acceptance can be based on various measures.

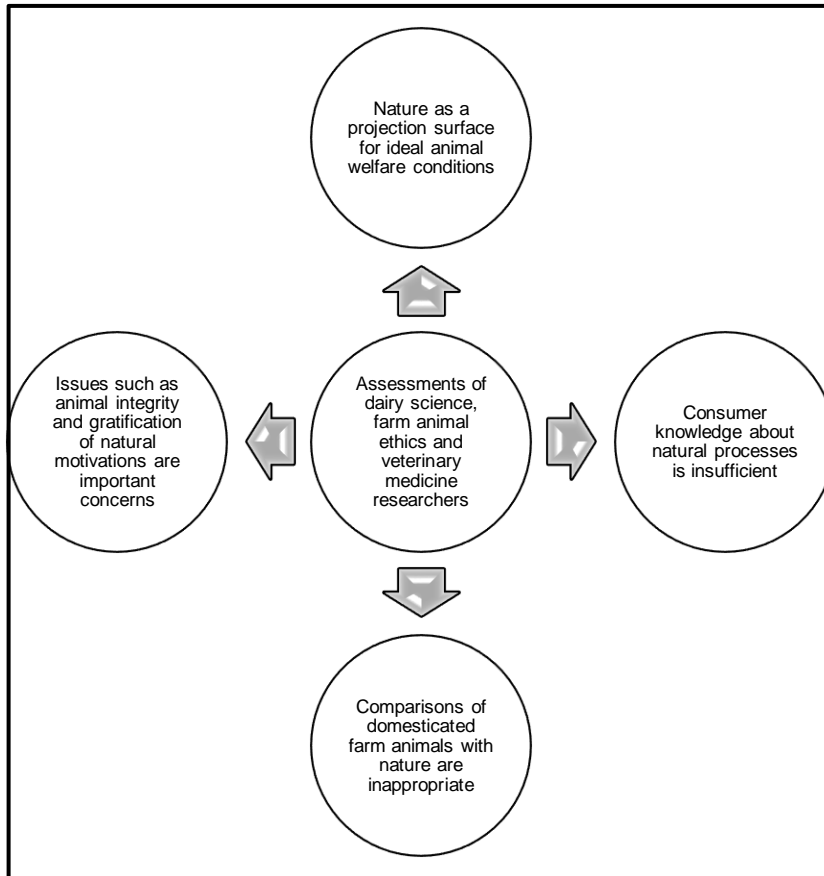
*“So, for example, grazing in dairy farming is, I think, the classic issue. I can imagine dairy systems that perform without grazing, but population surveys with regard to dairy farming show that the majority of the population shares the view that a cow belongs in some way to a grazing system. Then, of course, in the debate on specific indicator-based policies, the question arises whether we should leave this purely to the science-based indicators or whether we should add other indicators to make agriculture more acceptable.”*

In summary, scientists prefer to use species-specific approaches (and also technological approaches) to improve animal welfare rather than naturalness arguments. This study concludes that while the scientists interviewed understand the root of consumers’ concerns, they do not normally share their demand for more naturalness in dairy farming without any further reflection. Furthermore, the acceptance debate must be viewed in a sophisticated manner in the opinion of the experts. Figure 2 below summarizes the scientists’ assessments of the public’s demands for more nature connectedness in German dairy farming.

## 5 Conclusion and discussion

The present study presents assessments by German and Austrian animal and agricultural scientists on the importance of public demands for more naturalness in German dairy farming. There have been very few studies on this subject to date. The study does not provide representative results due to the qualitative study design. Based on the interview evaluations, this study recommends discussing the normative framework of people more intensively within animal welfare discussions—similar to the genetic engineering debate (Dürnberger, 2019). In particular, with regard to dairy cattle farming and livestock farming, consumers’ ideas about nature should be analyzed and discussed in more depth.

The evaluation of the interviews shows that the experts call into question consumers’ concepts of nature. It must be assumed that people in today’s civilized world tend to equate concepts of nature too strongly with well-being. Piechocki (2010) shows that the positive interpretation of wilderness and nature connectedness might be the result of a strong advanced civilization. In this respect, the findings of the present study show that animal welfare per se is not achieved by simply allowing more nature connectedness and wilderness in dairy farming strategies. Instead of pure demands for more nature connectedness in dairy farming, it seems that concepts are needed that bring together different animal welfare concepts. For example, March et al (2016) concluded in their study that grazing provides a good starting point for good animal welfare in dairy farming. However, grazing alone is not enough for an outstanding animal welfare situation. According to March et al. (2016), the decisive factor is how the dairy farmer manages grazing. In this respect, good animal husbandry is linked to farmers’ sound management.



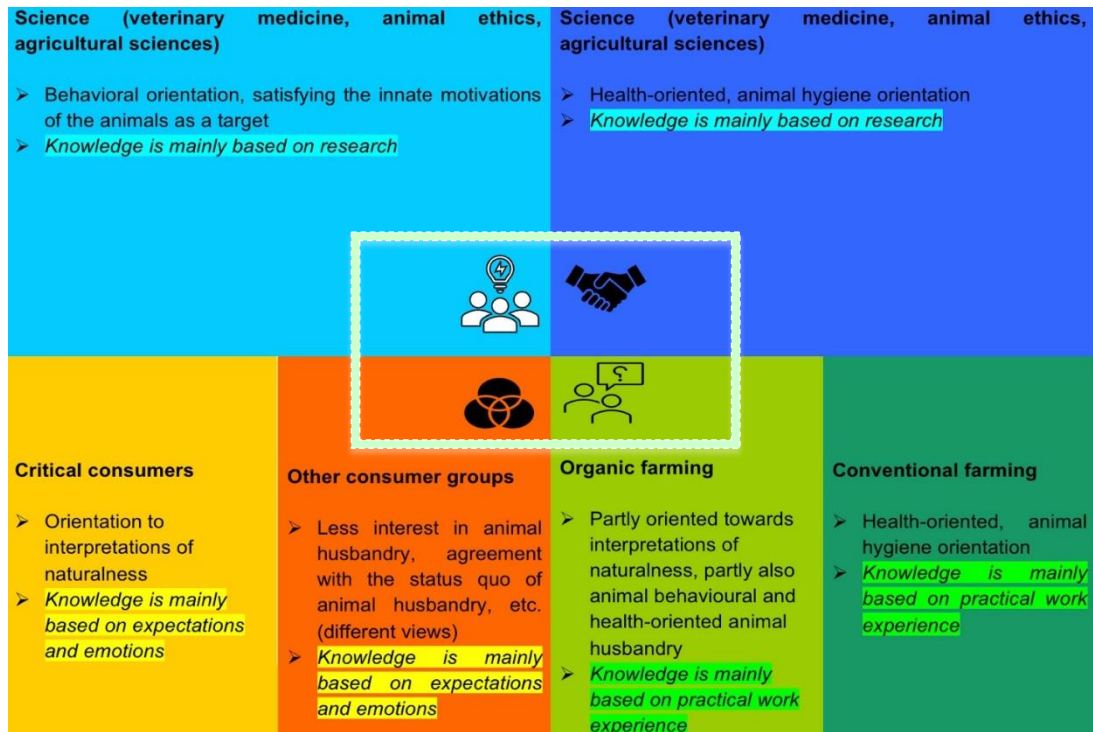
**Figure 2.** Summary-Assessments by the livestock scientists interviewed on the demands for more nature-connectedness in German dairy farming (Source: Our own diagram following our qualitative interview evaluation).

Consequently, simple demands for more grazing in dairy farming do not fully capture the animal welfare situation. Some demands for more nature connectedness must therefore be questioned, be added to other concepts or put in a different context. For example, in the context of more behavioral dairy farming (focusing on the affective states of animals) instead of supposedly natural dairy farming.

Furthermore, our analysis also makes it clear that within agricultural debates, a distinction must be made between issues of consumer acceptance of farm animal husbandry and improvement of animal welfare in livestock and dairy farming. Changes in livestock and dairy farming aimed at consumer acceptance cannot be equated per se with improvements in animal welfare. Here, it could in fact be critical if the improvements in animal welfare are geared too much toward consumer acceptance: actual animal welfare could suffer from this approach.

In the future, more dialogue formats will be needed to bring various groups with different sociological backgrounds into a discussion on the subject of animal welfare in livestock husbandry. And, of course, it has to be acknowledged that corresponding exchange processes on the subject of animal welfare are limited when people are similarly sociologically shaped (Fraser, 2008; Weary et al., 2015). Therefore, dialogue formats with different social groups should be created (similar to in Figure 3 below). These formats could also be used to address the issue of consumer acceptance of milk and meat production in a new way.

Waery et al. (2015) also concluded that there is a lack of exchange processes between different social groups on animal welfare in dairy farming. In these dialogue processes, science plays an essential role in terms of moderation and interpretation (Suda, 2007). In light of this, the present study is preparatory work for further research in the future. The evaluation of the interviews shows the content-related paths along which dialogue processes on the subject of animal welfare in dairy cattle can be moderated and where misunderstandings need to be addressed. In Germany in particular, the exchange processes should be stepped up as a matter of urgency. Regardless of the final direction in which dairy farming develops, there is currently no doubt that developments in dairy farming will have a formative effect on rural regions in Germany. This is of particular relevance since dairy cattle farming is the most important part of agricultural production in Germany at present (Thünen Institute, 2021; FAZ, 2022).



**Figure 3.** Characterizing of different discussion parties for future dialogue formats. Need for stakeholder dialogue processes to improve dairy farming practices. (Source: Our own diagram based on existing literature (Fraser, 2008; Dürnberger, 2020; Dürnberger, 2019; Ritter 2021; Heise, 2015) and the results section of this study).

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