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## **Assessing the Level of Knowledge of Ukrainian Consumers Regarding Cows' Welfare on Dairy Farms**

**Abstract.** In modern society, consumers are very often the driving force of change. Therefore, it is important to understand and satisfy their needs. The purpose of the study was to identify modern Ukrainian consumers' level of knowledge, interest and understanding of the importance of cows' welfare on dairy farms, and to determine the willingness to pay a higher price for products from cows with a high level of welfare. The research was carried out through an online survey of representatives of Ukrainian consumers (n=2,345) between March and April 2023. Ukrainian consumers did not feel sufficiently informed on cows' welfare, and most consumers had not come across welfare labelling and wanted to receive more information. Most Ukrainian consumers were ready to pay more (from 5 to 20%) for products from cows with a high level of welfare. Ukrainian consumers believed that the farmer has the greatest influence on welfare, and the consumers themselves have the least influence. Only 5% of consumers believe that government and legislation have a major impact on cows' welfare. The respondents highly rated such parameters of welfare as sufficient space, adequate and high-quality feed, access to pastures, good relations with farm workers and expression of natural behaviour. We consider it important to increase the level of awareness of consumers in the field of animal welfare, to further develop a product certification scheme, and in the future to conduct a survey on awareness in the field of dairy herd welfare among Ukrainian farmers.

**Keywords:** consumer attitude, animal welfare, dairy products

**JEL Classification:** I31, Q16

## **Introduction**

Population growth and increased consumption of livestock products challenge the world to ensure sustainable nutrition while controlling the impact of food production on the planet, people, and animals (Cornish et al., 2016). After all, in modern times, agricultural activity is no longer considered just a means of food production, but is fundamental to other key social goals, such as food safety and quality, environmental protection, sustainability and improving the quality of life in rural areas (Harry et al., 2008). The quality of animal products in an economically developed society is also evaluated in relation to the ethics of their production, including the impact on animal welfare and its possible implications for food safety (Rubini et al., 2021).

In turn, Covid-19 has increased consumer awareness of One Health concepts (Sweeney et al., 2022). Directly improving farm animal welfare (FAW) will significantly reduce the level of human diseases that may be associated with the consequences of increased industrial

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production. That is why the welfare of animals has become an integral part of the broad approach of 'One health' (Goldberg, 2016).

Consumers' perception of the quality attributes of foods of animal origin is gradually changing (Pasquale et al., 2014). In recent years, more and more people are becoming interested in the issues of housing, feeding, and in general FAW. Modern studies show that the situation is similar all over the world: EU (Clark et al., 2017), USA (Wolf et al., 2017; McKendree et al., 2014), Canada (Bejaei et al., 2011; Spooner et al., 2014), Latin America (Estévez-Moreno et al., 2022; Miranda-de la Lama et al., 2017), and Australia (Malek et al., 2017).

Unfortunately, there is currently limited information available regarding how modern Ukrainian consumers perceive animal welfare on dairy farms. While the willingness to pay more for high-welfare products has been extensively studied in developed market economies, there is a lack of knowledge in emerging economies, such as Ukraine. This topic holds significant importance in light of the anticipated changes resulting from the implementation of new legislation in the field of veterinary medicine and animal welfare which should enter into force by 2026 (Petkun, Nedosekov, 2022). Therefore, the objective of our study is to examine the current landscape of consumer perceptions regarding dairy cows' welfare parameters and the level of consumer awareness on this subject, and to evaluate the willingness of Ukrainian consumers to pay a premium for products derived from cows with a high level of welfare.

## **Materials and methods**

The survey lasted 4 weeks (March 6, 2023 – April 3, 2023). The questionnaire was created using Google Forms, distributed over the Internet (social media and messengers) and consisted of 28 questions divided into 5 sections.

At the beginning of the survey, there was a broad definition of animal welfare, along with a justification of the importance and relevance of this questionnaire. Section I contained an information and consent paragraph whereby the respondents confirmed their understanding that participation was voluntary and anonymous and agreed to the conditions of participation (being over 18 years old and residing in Ukraine at the time of filling out the questionnaire). Section II (seven questions) collected socio-demographic data from the respondents. Section III (nine questions) aimed to assess the respondents' awareness of dairy cattle's welfare on farms. We also asked the respondents to rate their level of knowledge about dairy farming, namely about methods of keeping cows, their feeding, breeding, and milking, where 1 – 'I don't know anything', 2 – 'I know very little', 3 – 'I have some knowledge', 4 – 'I know enough' and 5 – 'I know a lot'.

Section IV (five questions) asked the respondents to rate the importance of specific welfare parameters on dairy farms (sufficient space, expression of natural behaviour, access to pastures, good relationship with farm workers and high-quality and appropriate feeding) using a five-point scale (1 – 'not important' and 5 – 'very important'). The final section, Section V (six questions), examined consumer behaviour when purchasing dairy products.

A total of 2,358 respondents participated in the survey. Thirteen questionnaires were excluded because some answers were omitted. Thus, 2,345 questionnaires were used for data

analysis. We selected questionnaires with complete responses, where not a single question was missed.

For further statistical analysis of the questionnaires, we used the Microsoft Excel program to determine the means of the average values of the indicators and we used pivot tables for the analysis and comparison of the results.

## Results

### *Social-demographic data*

Most of the interviewees were women aged 26–35, living in big cities and having an income of 13–20,000 hryvnias per month. Only 20.6% of the respondents had a complete secondary or vocational education. The majority (79.4%) had higher education. Other socio-demographic data are shown in Table 1.

Table 1. Sociodemographic data

| Specification                                       | Number of respondents | %    |
|---|-----------------------|------|
| <b>Sex</b>  |                       |      |
| Female  | 2,039                 | 87.0 |
| Male  | 290                   | 12.3 |
| I do not want to specify                            | 16                    | 0.7  |
| <b>Age</b>  |                       |      |
| 18–25   | 435                   | 18.6 |
| 26–35   | 848                   | 36.2 |
| 36–45   | 681                   | 29.0 |
| 46–55   | 272                   | 11.6 |
| 56–65   | 97                    | 4.1  |
| >65   | 12                    | 0.5  |
| <b>Education</b>                                    |                       |      |
| Complete secondary education                        | 182                   | 7.8  |
| Vocational and technical education                  | 302                   | 12.9 |
| High education                                      | 1,861                 | 79.3 |
| <b>Place of residence (thousands of population)</b> |                       |      |
| City >500   | 1,020                 | 43.5 |
| City 250–500  | 273                   | 11.6 |
| Town 50–250   | 257                   | 11.0 |
| Town 20–50  | 215                   | 9.2  |
| Urban village 5–20                                  | 242                   | 10.3 |
| Village <5  | 338                   | 14.4 |
| <b>Average monthly income (in hryvnia)</b>          |                       |      |
| <12,000   | 442                   | 18.8 |
| 13,000–20,000                                       | 614                   | 26.2 |
| 21,000–35,000                                       | 574                   | 24.5 |
| 36,000–45,000                                       | 266                   | 11.3 |
| >45,000   | 449                   | 19.2 |

Source: Own research.

### *Respondents' awareness of animal welfare on dairy farms*

We asked the respondents to rate their level of knowledge about dairy farming, namely about the methods of keeping cows, their feeding, breeding, and milking, where 1 – 'I don't

know anything', 2 – 'I know very little', 3 – 'I have some knowledge', 4 – 'I know enough', 5 – 'I know a lot'. The average score of the knowledge of the respondents was 2.8. The largest group of the respondents, 32.2%, answered 'I have some knowledge', 15.7% answered 'I don't know anything' and only 10.3% of the respondents chose 'I know a lot'.

As for direct visits to farms where dairy cows are kept, 63.5% of the respondents indicated that they had visited such farms. Using pivot tables, we did not notice a connection between visiting a farm and knowledge of dairy farming. Most respondents who had visited a farm chose 'I have some knowledge', while most respondents who had not visited a farm chose 'I know very little'.

Regarding the awareness of the importance of a high level of welfare on dairy farms, an absolute majority of the respondents (83.3%) noted that it is 'very important' (average value,  $\mu = 4.78$ ) and only 0.2% of the respondents considered welfare on dairy farms 'not at all important'. We would also like to note that the maximum score of 5, 'very important', was given equally by both respondents who had visited a farm and those who had not visited a farm.

In one of the questions, the respondents were asked to evaluate who, in their opinion, has the greatest influence on the welfare of animals on a dairy farm (Figure 1).

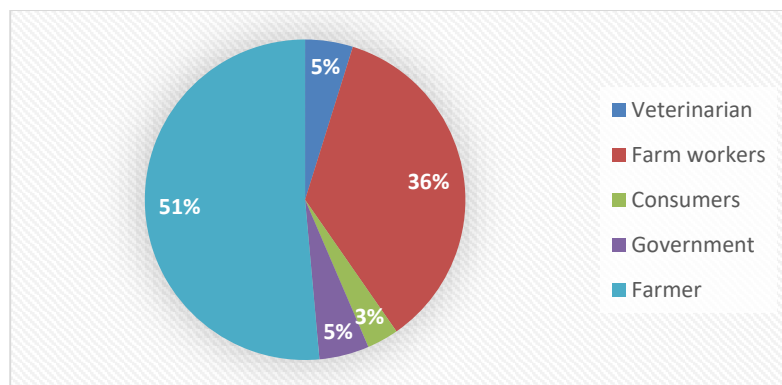


Fig. 1. Who has the greatest influence on the welfare of animals on a dairy farm?

Source: Own research.

It is interesting to note that people who are associated with animal husbandry (43.4%) and people who are not associated with animal husbandry (56.6%) answered this question in the same way. 51.9% of the respondents who had been to a farm believed that the farmer has the greatest influence on animal welfare, while 51.1% of the respondents who had not been to a farm believed the same. Respondents who had and had not visited a dairy farm put farm workers in second place in terms of their impact on animal welfare (34.5 and 36.3%, respectively). The lowest rate in both groups was the consumers (2.3 and 3.9%).

In the question of whether the animal welfare depends on the size of the farm, 3 answer options were offered: 1) 'Yes, it depends. On large farms, it is more difficult to achieve a high level of welfare', 2) 'Yes, it depends. It is easier to achieve a high level of welfare on large farms' and 3) 'No, it does not depend on the farm's size'. This question was included to determine the existence of prejudices among the respondents about large farms. 59% were

sure that animal welfare does not depend on the size of the farm, 25% believe that it is more difficult to achieve a high level of welfare on a large farm and 15.9% said that it is easier to achieve a high level of animal welfare on large farms. These results can be interpreted as indicating that the majority of modern consumers do not have stereotypical thinking about farms where a large number of cows are kept.

At the time of the survey, 61.1% of the respondents had not noticed information about animal welfare in the mass media, and 95.2% of the respondents believed that consumers do not receive enough information about animal welfare, while 82% of the respondents wanted to receive more information about dairy cows' welfare on farms. Of those respondents who believed that the information was not enough, 83.8% sought more information. In turn, among the respondents who considered the information sufficient, 54.5% wanted to receive more information.

The last question can be called somewhat 'provocative'. Asking about the average person's opinion (indirect survey) has been studied to elicit moderate social desirability bias (Lusk, Norwood, 2009). In this case, social desirability bias will respond in such a way that a certain percentage of people taking the questionnaire may tend to appear more concerned about this issue. So, we added the question 'Are Ukrainians concerned about cows' welfare on dairy farms?' (Figure 2).

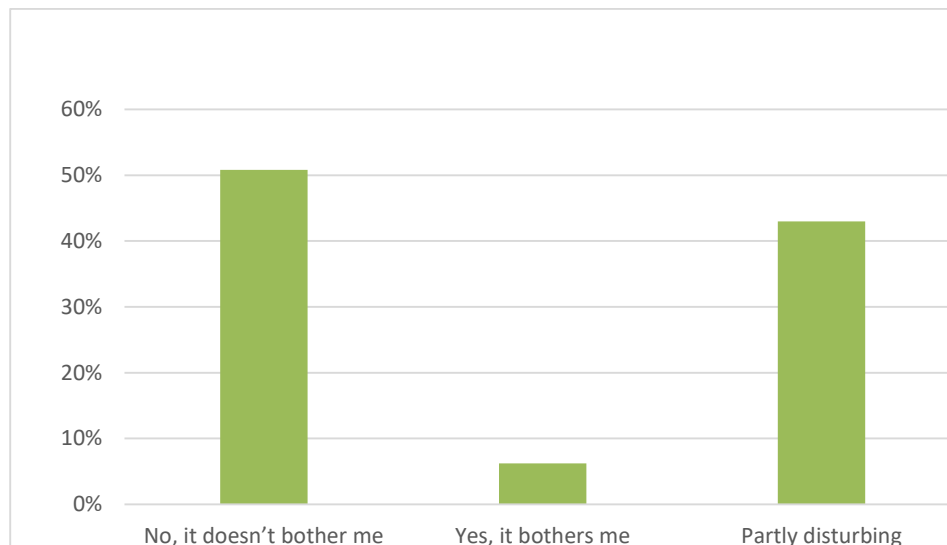


Fig. 2. Are Ukrainians concerned about the cow's welfare on dairy farms?

Source: Own research.

It is interesting to consider this question together with the question about the respondents' opinions about the importance of establishing a high level of welfare on dairy farms since, for example, 81% of those interviewed who chose 'No, it doesn't bother me' gave the highest score 5 – 'Very important' (Table 2).

Table 2. Correlation of the questions ‘Are Ukrainians concerned about the welfare of animals on dairy farms?’ and assessments of the importance of high levels of cow welfare on dairy farms

| Specification            | Score given by the respondents to the question ‘What is the importance of a high level of welfare on dairy farms?’ (1 – not important, 5 – very important) |    |    |     |     |
|--------------------------|--|----|----|-----|-----|
|                          | 1  | 2  | 3  | 4   | 5   |
| Yes, it bothers me       | 1%   | 0% | 2% | 6%  | 91% |
| No, it doesn’t bother me | 0.3%   | 1% | 5% | 13% | 81% |
| Partly disturbing        | 0%   | 1% | 3% | 12% | 85% |

Source: Own research.

***Importance of welfare parameters on dairy farms***

The results in Table 3 show high indicators in all parameters. That is, consumers realise and support the importance of meeting the animals’ needs not only in high-quality feeding, which directly affects the quality of livestock production in the future, but also in the expression of natural behaviour, good relations with farm workers, etc.

Table 3. Importance of welfare parameters on dairy farms

| Welfare parameter                    | Mean value ( $\mu$ ) |
|--------------------------------------|----------------------|
| Sufficient space                     | 4.707                |
| Expression of natural behaviour      | 4.485                |
| Access to pastures                   | 4.694                |
| Good relationship with farm workers  | 4.747                |
| High-quality and appropriate feeding | 4.951                |

Source: Own research.

***Purchasing behaviour***

According to Figure 3, the majority of the respondents (40%) consumed dairy products every day and 53% had never thought about the conditions of keeping cows when making purchases. 56% of the respondents with a vocational education thought about the living conditions of animals compared to 46% of the respondents with a higher education. At the same time, consumers who had visited a dairy farm more often thought about the living conditions of cows when shopping compared to the respondents who had never visited a farm (51 and 40%, respectively). Also, the largest percentage of respondents who thought about the living conditions of the animals (55%) were people living in rural areas (<5,000 population). For comparison, this indicator for people living in a big city (>500,000 population) is 44%.

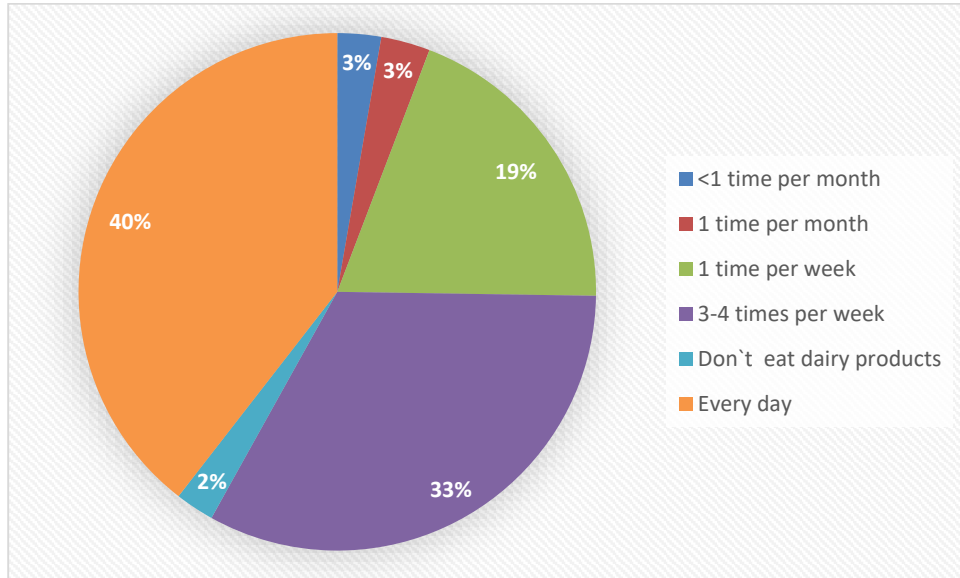


Fig. 3. How often respondents consume dairy products

Source: Own research.

87% of the respondents did not notice products with animal welfare labels. When asked whether they would trust the label 'from animals with a high level of welfare', 49% of the respondents chose the option 'Difficult to answer', 38% would trust it, and 13% would not trust the label advertising a high level of cow welfare.

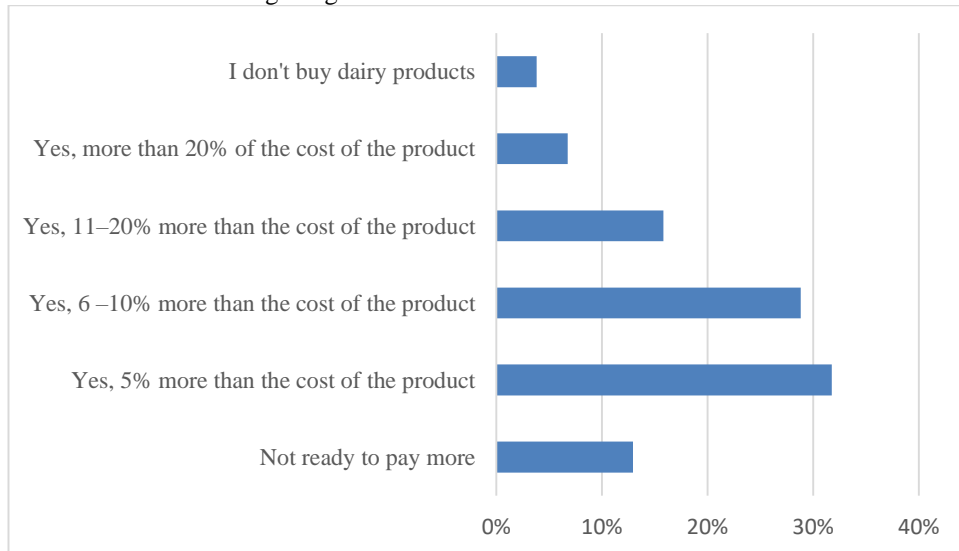


Fig. 4. Willingness to pay more for products from animals with a high level of welfare

Source: Own research.



Most consumers (90%) agree with the statement that dairy products from animals with a high level of welfare are better and more useful for humans. Regarding the willingness to pay more for products from animals with a high level of welfare (Figure 4), 32% of the respondents are ready to pay 5% more for the product, while 13% are not ready to pay more.

Regarding the correlations with income, 11% of people with an average monthly income of >45,000 hryvnias/month are ready to pay 20% more for the product, while 29% of people in this group are ready to pay 11–20% more. In the group of respondents who receive 36–45,000 hryvnias/month, the ‘leading’ indicator is the willingness to pay 6–10% more (36% of respondents). The respondents (34%) who receive 13–10,000 and 21–35,000 hryvnias/month are ready to pay 5% more. However, among the respondents whose average monthly income is <12,000 hryvnias/month, 36% are ready to pay 5% more and 24% of respondents 6–10% more for products from animals with a high level of welfare.

Considering the level of dairy consumption, 13% of the respondents who consume dairy products <1 time per month are ready to pay 20% more for the product, while 33% of the respondents who consume dairy products daily are ready to pay 5% more, 29% by 6–10%, 16% of respondents by 11–20%, and 12% of the respondents who consume dairy products daily are not ready to pay more for products from cows with a high level of welfare.

The sum up, we can observe that consumers with a higher level of income are ready to pay more for products from animals with a high level of welfare, with the vast majority of the respondents ready to pay more by at least 5% of the cost of the product.

## Discussion

The purpose of this study was to determine the level of knowledge and interest of Ukrainian consumers on the topic of the dairy cow welfare on farms and to assess their willingness to pay more for products from cows with a high level of welfare. We are the first in Ukraine to study the opinions of consumers specifically around the welfare of dairy cows. Therefore, in this case, we did not have the opportunity to compare our results with previous Ukrainian studies.

The high percentage of women in the sample confirms the socio-cultural indicators that are characteristic of Ukraine. According to the latest research, 83% of respondents agree with the statement that the most important task of a woman is to take care of the home and family. Regarding household issues, men quite often noted that it was a ‘women’s’ matter or shared this responsibility Rating Sociological group (2020). On the other hand, women were significantly more likely than men to say that these are their responsibilities at home. That is, given these statistics, we can assume that the high percentage of women in the sample is a result of the fact that women are more likely to lead the household and make food purchasing decisions. It is also necessary to take into account the fact that Ukraine is currently under wartime and many men are doing military service.

For a better understanding of the results of the survey question concerning additional payment for products from animals with a high level of welfare, it is worth noting that the average annual salary in Ukraine for 2023 is 171,696 hryvnias per year (an average of 14,308 hryvnias per month) (Pension Fund of Ukraine, 2023).

Understanding public concern for animal welfare must begin with an understanding of the role of knowledge in shaping attitudes towards animal welfare (Cornish et al., 2016). The

average score of awareness among Ukrainian consumers was 2.8 (out of 5) and is a rather low indicator that, in general, reflects the results of studies in other countries. For example, Kjærnes et al. (2007) asked European consumers about their knowledge of farm animal welfare and a significant proportion of the respondents answered 'Don't know', which may indicate too low a level of knowledge for respondents to draw certain conclusions.

Despite the low level of knowledge, the majority of Ukrainian consumers (83.3%) gave the highest score, 'very important', to maintaining high standards of welfare on dairy farms.

An absolute majority of Europeans (94%) believe that it is important to protect the welfare of farm animals. More than half of respondents (57%) consider it 'very important', and 37% consider it 'somewhat important'. Only a very small proportion (4%) of respondents do not consider the welfare of farm animals to be important (Eurobarometer, 2017). Among Ukrainian consumers, only 0.2% consider welfare on dairy farms to be 'not important at all'.

Schröder and McEachern (2004) argue that food consumption is often divorced from food production, and the general public has very little, if any, direct experience with farmers and production animals. As a result, consumers seem confused and misinformed about farm animal welfare and farming practices. For example, studies show that only 36% of Italian respondents have visited a farm where farm animals are kept at least once (Pasquale et al., 2014). According to the Eurobarometer (2005), 69% of Europeans have visited such farms. As for Ukrainian consumers, dairy farms were visited by 63.5% of consumers, which is a relatively high indicator.

In addition, many consumers actively avoid learning about the conditions imposed on farm animals or remain in 'willful ignorance' (Cornish et al., 2016).

At the same time, an absolute majority of Ukrainian respondents are sure that consumers are not provided with sufficient information about the level of dairy cow welfare. Similarly, a vast majority (82%) of those interviewed want to receive more information about the conditions of keeping and the level of welfare. Almost two-thirds of Europeans (64%) indicated that they would like to receive information about the conditions of treatment of farm animals (Eurobarometer, 2017).

Similarly, a Canadian study (Spooner et al., 2014) showed that most respondents expressed a desire to gain additional knowledge about animal husbandry practices.

The results of a study by Fonseca and Sanchez-Sabate (2022) show that only 46.6% of consumers agree or somewhat agree that higher animal welfare standards are easier to implement on small farms. Most respondents believe that animals feel more comfortable on small farms. Regarding our results, Ukrainians do not see a relationship between the size of the farm and the level of animal welfare. As for the influence on welfare, Ukrainian consumers believe that the biggest influence is actually the farmer and the workers; they do not consider themselves, as consumers, capable of influencing welfare on farms. According to Pasquale et al. (2014), Italian respondents believe that their purchasing choices do not affect welfare either. Also, consumers believe that the main responsibility for welfare lies primarily with farmers and secondly with politicians and veterinarians. A relative majority of European respondents believe that the welfare of farm animals should be resolved jointly between enterprises and state bodies (43%). However, there is a high proportion of respondents who believe that this is the business of all citizens and should be regulated by the government (40%) (Eurobarometer, 2017). A US study (Wolf et al., 2016) shows that consumers believe the USDA and dairy farmers have had the greatest influence on the welfare of dairy cattle.

An absolute majority (52%) of Europeans pay attention to animal welfare labels when buying products. In general, EU respondents believe that there is not enough choice in shops and supermarkets of food products with appropriate labelling regarding the protection of animal welfare (47%) (EC, 2016), while 37% of respondents never or very rarely look for a label and one in ten Europeans (10%) did not know that such a label even existed. As for labelling in Ukraine, an absolute majority (87%) of consumers have never come across a product with labelling that carries information about the level of the cows' welfare. According to Fonseca and Sanchez-Sabate (2022), many people believe that animal welfare labels are trying to deceive them, so the level of trust is generally low. As for Ukrainian consumers, only 13% definitely would not trust the labelling, with the majority (49%) choosing the option 'Difficult to answer', which, in principle, demonstrates a certain lack of trust and uncertainty regarding such labelling.

The importance of animal welfare to consumers is not limited to ethical considerations. Regan et al. (2018) in Ireland showed that a high level of welfare is a sign that a given product is healthier, safer and of better quality. Similarly, in our study, the majority of Ukrainian consumers agree with the thesis that dairy products from cows with a high level of welfare are more useful for people.

Regarding the willingness to pay more, an absolute majority of the Ukrainian respondents (61%) were ready to pay 5 to 10% more for dairy products from animals with a high level of welfare. Only 13% of the respondents were not ready to pay more, while 7% of the respondents were ready to pay 20% more for the product. More than half of Europeans are willing to pay more for products obtained from friendly animal production systems (59%). More than a third of respondents (35%) are willing to pay up to 5% more, and only a small minority (3%) are willing to pay more than 20% more. However, more than a third of EU citizens (35%) are not ready to pay more (Eurobarometer, 2017).

## Conclusions

The purpose of the study was to assess the level of knowledge of Ukrainian consumers regarding cows' welfare on dairy farms, to learn about their views, interest and willingness to pay more for products from cows with a high level of welfare. This is the first study on the welfare of dairy cattle conducted in Ukraine.

Our research shows that today's consumers value and understand the importance of achieving a high level of cow welfare on dairy farms. An absolute majority of the respondents believe that consumers are not sufficiently informed about the living conditions of animals on farms and want more information about the level of animal welfare. For consumers, the development of labelling of dairy products regarding the level of welfare, which they can trust, is relevant.

According to the study, Ukrainian consumers not only understand the importance of such aspects of welfare as the expression of natural behaviour, high-quality feed, good relations between man and animal, sufficient space for the animal, and access to pastures, but are also ready to pay more for dairy products from cows with a high level of welfare. Regardless of the state of war, the economic situation in the country and inflation, 84% of respondents are willing to pay more for this.

In the future, it is relevant to conduct a survey among farmers on the welfare of cattle on dairy farms, because it is them and farm workers who are considered by the surveyed consumers to have the greatest influence on animal welfare on dairy farms.

These results can become the foundation for further research aimed at studying the opinions of consumers who are interested in products from animals with a high level of welfare in order to build quality strategies for the development of the dairy industry in Ukraine. We also hope that this study will be useful during the creation and implementation of the certification and labelling of dairy products with regard to cow welfare.

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