

# Croatian meat consumer attitudes towards animal welfare-friendly products and production

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## SUMMARY

Decision making processes in the context of agri-food policy and agri-food industry cannot be completed without involving consumers. The concept of animal welfare-friendly production in Croatia is at the beginning of its development. Also, there is no sufficient information about Croatian meat consumer attitudes towards meat produced in animal welfare-friendly systems. The purpose of this study is to gain information about buying behaviour of meat consumers when buying red meat and consumer knowledge about animal welfare production in general. The consumers' attitudes were collected by means of face-to-face semi-structured interviews on a sample of 187 meat consumers in the butcher shops and at farmers' market. The data obtained from the survey were analysed with uni-variate analysis, chi-square test and correlation analysis. The findings suggested gender to have significant impact on the opinion regarding animal welfare ( $p < 0,05$ ), while higher income per household was on the border of significance ( $p = 0,053$ ) on the willingness to purchase animal welfare-friendly products in the future. The original contribution of this study is the identification of Croatian customers' attitudes towards animal welfare-friendly products and their knowledge about the concept of animal welfare production.

**Key words:** consumer attitudes, survey, animal welfare, red meat, Croatia

## INTRODUCTION

As a result of rapid development and progress of human civilization in the last few decades and the ever-growing need for animal proteins, the management of animal production systems has changed significantly. With the development and changes in of animal production systems, public concern about the welfare of animals used for meat production is especially emphasized (Harper and Makatouni, 2002; Bornett et al., 2003; Mikuš and Petak 2010; Mikuš et al., 2011; Spooner, et al. 2014). Concern for animal welfare is based on a large body of scientific research conducted on the topic of farm animal welfare, concluding that farm animals feel pain and fear (Sandoe and Simonsen, 1992; Stafleu et al., 1996; Sandoe et al., 2003; Grandin and Smith, 2004). Still, when explaining the term „welfare of farm ani-

mals“, it is often forgotten that it does not cease when the animal reaches certain weight or age and leaves the farm, but should be applied throughout the process of animal transport and slaughter. Therefore, farm animal welfare in general, and especially welfare of animals at the time of slaughter, has nowadays an increasingly important role in the meat production industry. Raising awareness regarding the food quality and farm animal welfare in EU was happening simultaneously with crisis of Common Agricultural Policy (CAP) dealing with product surpluses at the end of 1980s and at the beginning of 1990s. Since its legislative establishment in 1962 CAP focused primarily on production and little attention was given to addressing consumer growing concerns on welfare status of animals and the impact of agriculture on environment in general (Blokhuis et

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al.,2003). Animal production systems have become more intensified, animals have been moved to indoor housing systems for easier usage of prophylactic medicines and growth promoters, and at the end of the production animals are transported at ever longer distances as abattoirs have dropped in numbers but increased in size (Fraser, 2003; Sandoe et al., 2003; Winter et al., 1998, Boogard et al., 2011a). Animal production has intensified at different levels, i.e. the number of animals per farm has increased, while the ratio of stockmen to animals has drastically decreased (Blokhuys et al., 2003). Additionally, crisis of CAP was deepening due to several food safety-related affairs ("food-scares") such as devastating Bovine Spogiform Encefalopathy linked with fatal human brain disease (Creutzfeldt Jacobs disease), Salmonella in eggs, Benzene in Perrier bottled water ect. Those were just some of a number food scares that were causing people to question the way food was produced (Winter et al., 1998; Knowless, 2007).

Those concerns are described in numerous consumer awareness studies since 1990s (Bennet, 1996, 1997, 1998). The fact that consumers have negatively evaluated development of intensive animal production (Gade, 2002) has led to changes in the classical approach to food safety, from "farm to fork" to "fork to farm". This fork to farm approach takes into account the interests of consumers and integrates their needs for quality and greater food safety (Busquin, 2004; Mayfield et al., 2007), which has consequently led to the introduction of new legislation in recent years (Bornett, 2003; Moynagh, 2000).

The European Union (EU) has adopted the Action Plan on the Protection and Welfare of Animals (OJEC of 28. 02. 2006), which was later upgraded to the EU Animal Welfare Strategy for 2012-2015 (EC DG SANTE, 2012), as well as the Regulation for the Welfare of Animals at the Time of Slaughter (OJEC of 18. 11. 2009). These documents recommend and direct farmers to grow rear and slaughter farm animals with the lowest level of stress possible. Although the animal welfare legislation should provide effective guarantee of product quality, consumers associate animal welfare with a higher quality perception and labels, while high prices additionally increase the perception of quality (Ingelbleek, and Immink, 2011). In order for the meat to be allowed to be put on the market with a particular tag (brand), tag needs to specifically address how animals are raised and how they are handled. The existence of such certificates proves that consumers all over the EU are willing to pay more for meat and meat products derived from animals reared in animal welfare-friendly systems.

Nowadays Croatian food safety system is adjusted to EU standards due to the membership obligations. Although Croatia had a relatively well-developed food con-

trol system before entrance into EU, there was a lack of unique multi-institutional approach with no definition of common objectives, action plans and terms to achieve them. During negotiation period Croatia approached new way to create a food safety system based on a modern risk analysis tools and by putting consumers in focus (Antunović et al., 2006; Antunović et al., 2008).

First preliminary scientific study in Croatia on consumer attitudes towards products derived from animal welfare-friendly systems was conducted by Cerjak et al., in 2011. That study showed that more than half of the Croatian consumers did not consider animal welfare when buying meat or meat products. Those results were similar to Eurobarometer survey made in 2007 (EC, 2007) and 2015 (EC, 2015). In 2015 Ostović et al., conducted a survey on veterinary students in Croatia in order to determine whether there is a move in level of empathy for farm animals before and after attending the course on animal welfare. Unfortunately, the results indicated a lower level of sentience for farm animals after attending the course on animal welfare (Ostović et al., 2015).

The aim of this study was to determine the Croatian everyday consumers' attitudes and buying behaviour towards red meat produced in animal welfare-friendly systems which makes a good background for food industry in the context of demand on the market of red meat products. The results also reflect consumer's knowledge and awareness about farm animal welfare, important for national agricultural and food policy in creating policy measures and tools for improvement of standards in meat production and of knowledge transfer to consumers.

## MATERIAL AND METHODS

These face-to-face semi-structured interviews were conducted with 187 meat consumers of differing demographics including age, sex, and educational, social and economic background. Survey was conducted in the butcher shops and at farmer markets on the people who were in the process of purchasing red meat, or some of the red meat products (purposive sampling). Only those visitors that were willing to take part in the survey were interviewed and it is not possible to calculate a response rate based on how many people declined to participate. The survey was conducted in the period of three months, from October 2012 to January 2013. Before conducting the questionnaire in the field, it was tested on a sample of 20 respondents to correct any ambiguities in the wording and order of questions.

The questionnaire consisted in total of 23 closed and open-ended questions regarding attitudes and knowledge about animal welfare, importance of several animal welfare features, opinion about animal wel-

fare situation in Croatia, and willingness to pay added value for animal welfare food. The socio-economic data on consumer age, sex, education and economic status were collected.

Consumer attitudes towards animal welfare were measured by means of an item pool consisting of 10 statements. Statements were selected from the literature (Heleski et al., 2004; Frewer et al., 2005; Tawse, 2010; Cerjak et al., 2011) and adapted to this research. Respondents' task was to rate them on a Likert-type scale from one to five, where one meant full disagreement, and five meant full agreement with a particular statement.

Data collected in the survey were analysed using the Statistical Package for Social Sciences (SPSS), Version 17.0. Univariate analysis was conducted to determine the frequencies of consumer answers. In order to test differences between consumer demographic groups, cross tabulations were conducted and their significance tested with the  $\chi^2$ -test. Indicators of consumer attitudes were investigated by calculating the mean consumer responses on attitude scales. Quantitative results are interpreted and claims are compared with the findings from other studies dealing with animal welfare production, related policies and consumer behaviour.

## RESULTS

The basic socio-economic characteristics of the sample are presented in Table 1. A total of 187 respondents participated in the study. The sample included 54.5% of female and 45.5% of male respondents, average age 46 years. About 63% of the consumers were younger than 35. More than half of the respondents had completed high school and 31% had university education. Only 14% of the consumers had lower monthly income (up to 400€). (Table 1).

More than half of the respondents were familiar with the concept of animal welfare at the time of slaughter (63%), where this concept was most commonly associated with the care and humane treatment of animals in

**Table 1** Socio-economic characteristics of study sample

		100%
Sex	Male	45.5
	Female	54.5
Age (yrs)	18-25	30.0
	26-35	33.0
	36-50	23.0
	50+	15.0
Education level	Elementary school	5.0
	High school	64.0
	University degree	31.0
Family income group	Low income	14.0
	Middle income	27.0
	Higher income	31.0
	High income	28.0

farming and transport. Of the total number of the respondents that were familiarised with animal welfare at the time of slaughter, 42% of them reported buying products from animal welfare-friendly production systems. Of these products, the consumers usually bought fresh meat and meat products (but they also stated that they buy eggs and milk). More than half of study subjects (55%) believed that when buying meat there was a quality difference between the meat from animal welfare-friendly system and classically produced meat, while one-third (33%) could not estimate the difference. The respondents believed that the meat from animal welfare-friendly systems had better quality and taste because those animals live in humane conditions; they are less exposed to stress and eat healthier (Table 2).

**Table 2** Consumption and purchasing behaviour of consumers and their opinion regarding animal welfare

		100%
Are you familiar with the concept of animal welfare at slaughter	Yes	62.6
	No	37.4
Do you buy products that are produced in welfare	Yes	42.2
	No	39.0
	I don't know	18.7
Is there a difference between meat produced in welfare and classically produced meat?	Yes	55.1
	No	11.8
	I don't know	33.2

Besides welfare at the time of slaughter, respondents believed it was also very important (43%) and important (42%) to pay attention to animal welfare on farms. Only 15% of the respondents believed that it was neither important nor unimportant. Results showed that animal welfare on farms was much more important for women than for men ( $p < 0.05$ ).

As illustrated in Table 3, the respondents rated animal welfare attributes as follows: always available water and feed (mean 4.82), quality of feed (mean 4.68), the possibility of free movement of animals (mean 4.57), and contact with natural light (mean 4.56). The rest of the concerns were rated lower, including transport and slaughterhouse conditions, but still in the upper half of the Likert-type scale. The lowest score was obtained on the issue of animal mutilations (mean 3.91).

Consumers were asked to assess the probability of buying animal welfare-friendly products in the future. The results showed that approximately half of the respondents (51.3%) were likely or very likely to buy animal welfare-friendly products in the future, while for 13.9% it was unlikely or very unlikely. One-third of our study subjects were not sure about their future buying behaviour regarding animal welfare-friendly products.

Regarding the consumer willingness to pay more for animal welfare-friendly products, a high number of respondents (71%) were willing to pay higher price for animal welfare-friendly meat products. Nearly one-third (31.5%) of these consumers were ready to pay extra price up to 10%, 13% were ready to pay from 15% to 20% higher price, and 25% were prepared to pay more than 20% higher price for animal welfare-friendly products (Figure 1). The results showed that there is almost no difference in buying animal welfare-friendly products due to the elevation of household income.

**Table 3** Consumer rating of the importance of different animal welfare attributes

Attribute	Mean	Standard deviation
Possibility of free movement on farm	4.57	0.67
Availability of food and water on farm	4.82	0.41
Feed quality on farm	4.68	0.57
Natural light on farm	4.56	0.68
The possibility of expressing normal behaviour	4.11	0.90
Animal mutilation (castration, teeth grinding, etc.)	3.91	1.12
Transport conditions	4.36	0.79
Access to open part of the abattoir depot	4.44	0.78
Slaughter conditions	4.46	0.81
Presence of trained slaughterhouse personnel	4.40	0.87

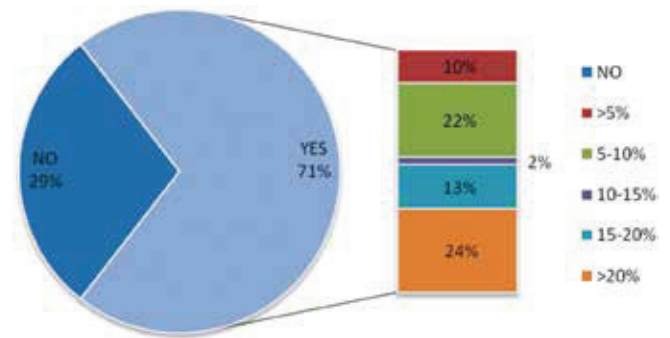
As presented in Table 4, the largest number of respondents believed that consumers needed more information about the welfare of farm animals (mean 4.66). Also, a large number of respondents believed the society to be morally obliged to maintain high standards with regard to the welfare of farm animals (mean 4.24), and that everyone should think about the suffering of animals (4.18). On the other hand, respondents thought the benefit in the slaughterhouses to be a very important issue, and they preferred meat deriving from animals reared in animal welfare-friendly systems (mean 3.75). The statement that it did not matter how animals were reared because they did not know for better was pointed out as negative by study subjects (mean 1.61).

**Table 4** Attitudes of consumers towards welfare of farm animals

Statement	Mean	Standard deviation
I prefer to eat meat from animals which I know have been treated well	3.75	0.95
The taste of meat is more important than the ways of breeding animals	2.76	1.32
Animal suffering should be everybody's concern	4.18	1.05
It does not matter how animals are reared as they do not know for better	1.61	0.92
Animals should be able to express natural behaviours on farms	4.11	0.88
Pet animals deserve better treatment than farm animals	2.38	1.24
Society has moral obligation to maintain high standards with regard to the welfare of farm animals	4.24	0.82
I would like consumers to be consulted more about animal welfare issues	4.66	2.98

Consumers were asked to assess the probability of buying animal welfare-friendly products in the future. The results showed that approximately half of the respondents (51.3%) were likely or very likely to buy animal welfare-friendly products in the future, while for 13.9% it was unlikely or very unlikely. One-third of our study subjects were not sure about their future buying behaviour regarding animal welfare-friendly products.

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**Figure 1** Consumer willingness to pay more for animal welfare-friendly products.

More than half of the respondents (52%) believed that animal welfare conditions in Croatia remained unchanged in the last decade, while 40% believed these conditions had been improved. Only 8% of the respondents believed these conditions had even worsened.

## DISCUSSION

This study was intended to investigate the opinions and attitudes of Croatian meat consumers and this is the reason why it was conducted on specific locations such as butchers' shop and farmers market. Also, for this specific study we opted to use face-to-face interviews and purposive sampling (instead telephone or internet survey), as we wanted to be sure that our respondents were the ones that we need to gather the data from.

In general, our results show a great agreement with other surveys taken in the EU in the last decade and Croatian consumers appear to express a high level of empathy toward farm animals. Consumers show concern regarding: a) natural conditions on farm such as access

to natural light, and open space (farmyard), but also regarding feed and water availability and quality (Ellis et al., 2009; Boogard et al., 2008; Krystallis et al., 2009), but also the possibility of animals to express normal behaviour and to move freely (Evans and Miele, 2007; Veissier et al., 2011), b) mutilations and other pain associated modern production methods (Boogard et al., 2011b; Miele et al., 2011), c) animal management and the ways that animals are reared (Boogard et al., 2008; Boogard et al., 2011b; Ellis et al., 2009), d) transport and slaughter conditions and presence of trained personnel during the slaughtering process (Miele and Evans, 2005).

Notably, consumers stated very high concern regarding the moral obligation of the society for animal welfare, which was followed by a great individual concern. This suggested that Croatian consumers are getting ever more aware of their role in the meat production chain. In the case of European public, the result is somewhat different as EU public tends to delegate the responsibility for animal welfare standards to farmers rather than to themselves as consumers (EC DG SANTE and DG COMM, 2007).

Collected data show that, similar to the previous research conducted in Croatia (Cerjak et al., 2011), but also in accordance to the opinion that prevails in the EU (EC DG SANTE and DG COMM, 2007; Mayfield et al., 2007; EC DG SANTE and DG COMM, 2015), the vast majority of respondents in the survey expressed high concern for the welfare of animals. However, although respondents showed great concern about the welfare of animals, most of them did not take into account animal welfare when purchasing meat, similar to other European consumers, and Croatian consumers tend to mix the term "farm animal welfare" with the other similar tags such as "BIO" and "ECO" (Napolitano et al., 2010; Boogard et al., 2011b; Spooner et al., 2014).

The high percentage of over 70% of the consumers in the survey who are willing to pay more for animal welfare-friendly products may seem somewhat surprising, but is fully in line with the majority of EU citizens, as well as with a previous study conducted in Croatia (EC DG SANTE and DG COMM, 2007; Cerjak et al., 2011). The willingness of respondents with higher household incomes to pay more for animal welfare-friendly products is on the limit of statistical significance ( $p=0.053$ ), and when we look at the willingness to pay more in further detail, almost one-quarter of the study subjects would pay up to 20% higher price, and 45% of consumers would pay up to and more than 20% for such products. These percentages are little higher in Cerjak, 2011 paper (about one-fourth of them would pay up to 50% more and three-fourths up to 20% more for such products) but this could be explained by the fact that Cerjak, 2011 conducted survey at

a fair of traditional products where the population is more specific in the terms of respecting the traditional way of production in which quality is always first. Nevertheless, these results can be perceived as encouraging for food industry, since only a relatively small portion of consumers thought they would not buy animal welfare-friendly products in the future. There was also a relatively large proportion of indecisive consumers, who can be influenced through education and advertising to start buying animal welfare-friendly products, and that is the way where the food industry in Croatia should be looking in the future, especially because 86% of our respondents were likely to buy animal welfare-friendly products in the future, these systems should become very important to the Croatian meat producers. Moreover, company competitiveness could be strengthened by targeting market segments of consumers that demand products with higher animal welfare standards (Keeling et al., 2012).

Majority of our respondents (52%) believed that farm animal welfare improved in the last decade, which can be explained by major public campaigns conducted by several big Croatian animal welfare NGO's and raising awareness about status of farm animal welfare in Croatia through different on and off-farm policy instruments (support for education of food-chain actors and research and development). Additionally, farmers are more and more interested and motivated by national and especially CAP payments from European Agricultural and Rural Development Fund (EARDF) which aim to compensate expenses that result from implementation of the higher welfare standards. Also producers advertise the welfare ways of production more and more on their products (i.e. "Croatian meat" label). In countries where animal welfare is an indirect or secondary motive for consumers, the relationship between animal welfare and other cues, such as quality labels or region-of-origin labels, might be strengthened (Keeling et al., 2012).

Consumers in EU believe that animal welfare had improved in the last decade (Italy 59%; Great Britain 55%; Sweden 68%) according to Mayfield, 2001, which is in line with the Eurobarometer (2007), where this percentage is 51%. About one third of respondents in the survey conducted by Cerjak et al., 2011 believed that protection of the farm animal welfare in Croatia had improved over the last decade, so our results are comparable with previous surveys, with one difference – only 8% of respondents think welfare is worse than before. This result is quite different from the study by Cerjak et al., 2011, where as many as 44% of the respondents believed that current status of animal welfare on farms was worse. This can be explained by the smaller sample size in their study, as well as the already mentioned testing including a more specific population (visitors at a fair of traditional

products) as buyers of traditional products are more in favour on traditional ways of meat production.

Socio-economic characteristics of consumers in our study in general had one true statistical significance and that was gender, while age, education level and respondents background (rural vs. urban) had no significance. Females expressed greater concern ( $P < 0.05$ ) for farm animal welfare than males did, which is in correlation with other surveys which included gender issue in animal welfare attitudes (Paul and Podberscek, 2000; Serpell, 2005; Hazel et al., 2011; Van der Weijden, 2013; Pollard-Williams et al., 2014). As a reason for this Walker, 2014 states that the male brain is predominantly hard-wired to „systemize“: to analyze, explore, and understand systems and that the female brain, on the other hand, is predominately hard-wired for „empathy“: to attribute emotions to oneself and to others and respond to others' emotions in an emotionally appropriate way. Also, more positive attitudes from females towards animals compared to men can be associated to a sympathetic reaction if females believe that animal use will cause some kind of pain or distress to animals Knight et al., 2003). Thus females are more willing to attribute emotions to animals because they are predisposed to empathize with others Knight et al., 2004).

## CONCLUSIONS

This was the largest face-to-face survey of consumer awareness of animal welfare issues conducted in Croatia to date. The opinion of respondents about farm animal welfare at the slaughtering facility was predominantly affected by sex (women were significantly ( $p < 0.05$ ) more sensitive to the treatment of animals, including farm animals). Age and level of education had a substantial impact on consumer opinion, but not significant. Study subjects were interested in whether animals were treated in accordance with animal welfare standards during rearing, transport and slaughter, while expressing increasing interest in the use of humane methods. The results showed the majority of consumers to be concerned about animal welfare. However, there is room for improvement in the segment of indifferent consumers, or in those that are still unaware of the animal welfare impact on the meat quality. In fact, the respondents recognized themselves the need for better information of Croatian consumers in the area of animal welfare at farms and slaughtering facilities, as well as how different levels of animal welfare affected meat quality.

The sample size and specific sampling procedure in this study allowed drawing some conclusions about Croatian consumers of meat and their attitudes towards animal welfare. Croatian consumers are increasingly interested and becoming ever more aware of the role

of animal welfare in meat quality, and there is an increased demand for transparency in the way the issues of societal concern are assessed and managed. In general, they want to know the ways how the food is produced, and the origin of the meat and therefore choose what to purchase and how much they will spend.

Future research should involve consumer attitudes towards different farming systems and methods, as well as evaluation of the effectiveness of farm animal welfare, so there is an objective need to repeat these studies on a larger sample and distribution of respondents across all Croatian regions.

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