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Abstract

The paper aimed to define the basic elements and the importance of welfare as well as the subsidy system for welfare in animal production in Croatia. The importance of animal welfare is reflected in the commitment of various organizations and policies that deal with this area. Therefore, it's not surprising that animal welfare is the subject of agricultural policy in the European Union which through a system of subsidies in agriculture strives to increase the welfare of animals. The importance of welfare is confirmed by International Organization for the Control of domestic animal productivity - ICAR, which develops specific models and calculates the welfare index of individual farms, and based on that data is concluded that greater animal welfare leads to higher milk yields of cows, and higher satisfaction and health of the farmers, but also a better financial result of the farms.

Key words: welfare, welfare assessment, dairy cows, legislation

Introduction

Animal welfare was always important to farm owners because the quality of life of both farmers and their families depended on the condition of the animals and the benefits they receive from them. Therefore, it's not surprising besides of farm owners, veterinarians, traders, numerous consultants, organizations and agencies implement laws that were created and passed based on of research, aiming for the protection and animal welfare.

Records from early 1965 indicate that animal welfare was emphasised by Prof. Brambell from Great Britain (Brambell, 1965) proposed five „fundamental“ freedoms that are supposed to be

ensured: that animals can lie down, stand up and move, stretch and care for itself regardless of its purpose or manner of holding. Furthermore, freedoms were revised in 1979 (Anonym, 1979) and refer to:

1. Freedom from hunger, thirst and poor nutrition through direct access to fresh food and water,
2. Freedom from discomfort by providing an appropriate environment (accommodation) including law and comfortable resting area,
3. Freedom from pain, injuries and diseases through their prevention or rapid diagnosis and treatment,
4. Freedom to express the behaviour characteristic of species by ensuring sufficient space, appropriate housing and social contact with animals of the same species,
5. Freedom from fear, and stress by ensuring conditions that don't cause mental suffering.

International organizations for animal welfare of animals in the world

Today, animal welfare is based on the development and setting of certain standards, educating people who deal with animals, increasing and strengthening the capacity of farms, monitoring the implementation of adopted standards and policies, and communicating with governments and organizations that deal with animal welfare. One of the oldest organizations is the IDF, which was founded way back in 1903 in Brussels, Belgium at the 1st International Dairy Congress to feed the world with safe and sustainable dairy products, developing standards that have a basis in science to increase trust in dairy products and production (IDF, 2021). The IDF cooperates with other international organizations such as FAS, WHO, OIE and ISO to harmonize standards concerning the milk and milk products sector at the global level. Guided by this, back in 2008 a project group of experts and members of the IDF standing committees for farm management and animal health and representatives of the World Organization for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) issued a guide to the welfare of animals in milk production. They identified five key areas of action in the development and implementation of a quality management system for the welfare of dairy animals. They state that these are:

1. Good storage,
2. Proper nutrition,
3. Adequate physical environment,
4. Responsible breeding practices and
5. Robust health management (IDF, 2021).

Furthermore, the importance of compliance in all areas is crucial because only milk from healthy and well-cared-for animals could ensure food security for millions of people around the world.

There are many organizations in the world that deal with the area of welfare, and one of the most famous is the World Organization for Animal Protection (OIE). OIE in cooperation with ISO (The World Federation of National Standards Bodies) developed the ISO/TS 34700 standards for animal welfare, which are based on ethical principles and serve to standardize the rules and behaviour towards animals in all their stages of development (Tranchard, 2016). It benefits everyone, from producers, sellers, processors, and buyers, and can also be used by competent bodies that deal with the implementation of animal welfare standards in the public or private sector that meet the conditions of OIE TAHC. In that way, they provide support in the practice of animal welfare. The OIE Guiding Principles on Animal Welfare also mention „Five Freedoms”, which outline five aspects of animal welfare under human control. Furthermore, accordingly to Tranchard (2016), the food industry is taking more action to better implement animal welfare management. The new ISO technical specification ISO/TS 34700:2016, Animal welfare management - General requirements and guidelines for organizations in the food supply chain will help the food and feed industry to develop an animal welfare plan that is aligned with the principles of the World Organization and Animal Health (OIE), and Terrestrial Animal Health Code (TAHC) as well as that ensure the welfare of domestic animals throughout the supply chain. ISO/TS 34700:2016 applies to terrestrial animals that are bred or kept for the production of food or animal feed in certain areas that are excluded from the standard. Furthermore, Tranchard (2016) stated that the OIE TAHC Animal Welfare Introductory Recommendation Document Facilitating the Implementation of Animal Welfare Standards in Chapter 7 elaborates on the topics:

- Transportation of animals by sea,
- Land transport of animals,
- Transport of animals by air,
- Slaughter of animals,
- Animal welfare and fattening cattle production systems,
- Animal welfare and broiler production systems,
- Animal welfare and dairy cow production systems.

Picture 1. shows dairy cows in the pasture that implies breeding following the recommended animal welfare standards.



Picture 1. Dairy cows at the pasture (photo: Mikić, 2022)

Animal Welfare in Croatia

With the adoption of the Animal Protection Act which is in line with the legal acts of the EU, animal welfare is becoming an increasingly researched topic in Croatia. As stated in Animal Protection Act (NN 102/ 17, 32/19), this Law prescribes the responsibilities and obligations of natural and legal persons for the protection of animals during use, which includes the protection of their lives, health and well-being, the manner of handling animals, the conditions necessary for the protection of animals during keeping, breeding, performing procedures on animals, killing, transportation, using animals for scientific purposes, keeping animals in zoos, in circuses and long shows, when selling pets and dealing with abandoned and lost animals, inspection supervision and misdemeanour provisions. Respecting the laws of the Republic of Croatia through the Agency for Payments in Agriculture and in line with the Common Agricultural Policy (CAP), support measures for farmers are implemented through the Rural development programs of the Republic of Croatia, and from May 2018, it starts through the measure M14 - animal welfare (MP, 2023). Furthermore, M14 includes the application of high standards of animal welfare that go beyond current legislation or common practice in the following areas:

- Provision of water, food and care for animals following their natural needs,
- Ensuring housing conditions in terms of enough space, adequate litter and natural light,
- Access to the open air,
- Avoiding mutilation and/or castration of animals, and if necessary the use of anaesthetics, analgesics and anti-inflammatory drugs or immune castration (MP, 2023).

M14 contains five types of operations. Payment for animal welfare in cattle, pig, poultry, goat and sheep breeding (MP, 2023) and we will deal with animal welfare in cattle under the dairy cow category. M14 through operation 14.1.1.: the welfare of animals in cattle breeding provides support in the animal categories of dairy cows, fattening steers and calves where it is necessary to have 4 cows, 7 steers for fattening and 10 calves to be able to receive the support. Well-being on the farm includes three areas of well-being:

- improved nutrition,
- housing conditions and
- access to the open.

Furthermore, accordingly to measure M14 - animal welfare (MP, 2023), in the case of improved nutrition, subsidies can only be realized if it is combined with another area of well-being or improved housing conditions or access to the outdoors. For the improved nutrition measure itself, it is important to comply with two requirements, namely the nutrition plan and the control of mould and mycotoxins. The feeding plan is important not only from the financial side-economic losses but also due to the health condition of the animals because only proper nutrition can ensure good health, growth and maximum protection of domestic animals and also prevent food contamination caused by mycotoxins which lead to animal diseases. This measure contains the creation of a feeding plan based on the day, month and year in accordance with the number of heads and the expected production. The counselling service must give its consent to the prepared feeding plan while control of mould and mycotoxins is analysed for aflatoxin B1 by a certified laboratory and the findings are submitted to the Agency at least by the end of the year.

Also, in the category of improved housing conditions, it's important to fulfil one of two requirements (MP, 2023). The first is to increase floor area which implies an increase in the net floor area that doesn't include obstacles, feeders or drinking troughs by at least 10% compared to prescribed standards. Second is the enrichment of beds in such a way that mattresses are placed on beds for dairy cows or rubber mats for fattening beef and calves at a minimum of 25% in the barn. The most commonly used bed enrichment with litter is at least 3 kg per day for dairy cows or beef cattle and at least 1.5 kg per day for calves. These procedures are applied to achieve greater comfort for the animals while resting and easier getting up and lying down.



Picture 2. Bedding of dairy cows (photo: Mikić, 2022)

The third category of animal welfare subsidies is access to the open where at least one of two requirements must also be met (MP, 2023). The first is to keep livestock on pasture at least 120 days per year meeting all prescribed rules of animal welfare and zootechnical keeping conditions, and it only applies to dairy cows. The second requirement is keeping the animals on the outlet for at least 150 days a year, so the animals are released on open outlets in or near the barn where the animals have free access and are allowed to move freely following the size of the floor area prescribed by law. Depending on which subsidies farmers apply for, it is necessary to complete education in the field of animal welfare for at least 4 hours a year and to keep an appropriate record form in which all required data are regularly entered to be able to monitor and control the implementation of prescribed obligations. The duration of these measures is the calendar year, from January 1. to December 31.

World research on welfare

Canadian network Lactanet for dairy excellence conducted research on the topic of animal welfare, to develop a dairy management tool that enables the assessment and monitoring of welfare status on dairy farms based on DHI data (Luntz and Krogmeier, 2019). They wanted to show the well-being of animals through the generation of a well-being index, respectively welfare of the herd. Welfare was observed through four focus domains:

1. Longevity
2. Nutrition and production

3. Calves and youth
4. Health and reproduction.

In that way, they analyzed a model which evaluates animal welfare through several areas and indicators such as longevity (lactation numbers, excreted and dead cows), nutrition and production (urea in milk, management, cows in transitions and cow production), calves and youth (mortality of calf and age of heifers at calving) and health production (abortion, beta-hydroxybutyrate level, number of somatic cells in milk, ratio of protein and fat in milk, lameness and cow injuries) etc. (Luntz and Krogmeier, 2019). Based on that research it could be emphasised that there are a lot of factors that influence on milk yield of cows, most important are genetics, nutrition which is related to diet and quality of food, conditions in which they live, the way animals are treated, number of milking on daily basis, number of lactations, age, health condition, and method of treatment. Furthermore, Luntz and Krogmeier (2019) conducted research in Germany (Bavaria) in the period from January to October 2017, on 29.636 first parity Simmentals reared on 6.068 different farms. They scored animal welfare accordingly to three criteria – skin damage, pollution/contamination, and movement which they graded on a scale from 1 to 5. A low grade is the worst, while A high grade is the best. The scale of evaluated traits accordingly to Luntz and Krogmeier (2019) is presented in Table 1.

Table 1. The scale of evaluated traits (1 - 5; Luntz and Krogmeier, 2019)

Score	Skin	Cleaness	Mobility
1.	Very noticeable changes in the rear legs	Strong filthiness on The rear body	A cow hesitantly walks and saves one or more legs, has low and curved steps
2.	Larger hairless parts on hooks or thicker one or both legs	Clear contamination on the entire back legs	A cow walks unevenly or without pronounced slide movement lower head
3.	Larger areas without hair, 2-5cm	Detectable contamination	Cow walks, legs not quite parallel, head partially lowered
4.	Very small hairless parts, >2cm	Very small contaminations	A cow walks fluidly, straight back, head raised
5.	No hairless stains	Very Clean	A cow walks fluidly with Large-spaced steps

Luntz and Krogmeier (2019) concluded that the size of the herd affects skin and mobility problems, so larger herds have more problems with the skin and mobility. Finally, the amount

of milk yield of cows, that is higher milk yield, doesn't have a negative effect on animal welfare criteria.

Conclusion

Based on this review it could be concluded that more attention is paid to animal welfare, through the education and training of people who deal with animals. Therefore, the morbidity of animals is reduced, reproductive efficiency is increased, the use of antibiotics is reduced, and the general health of animals that enter the food chain is improved. Also, the milk yield of dairy cows is increased which leads to higher profits. In that Way, animals are in excellent condition but also the farmers' satisfaction is increased.

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