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### **Attitudes of life sciences students towards farm animal welfare issues**

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Postawy studentów kierunków przyrodniczych wobec dobrostanu zwierząt gospodarskich

**Summary.** The aim of this study was to examine the knowledge and opinions about farm animal welfare (FAW) aspects amongst 199 students of various faculties (Animal Husbandry, Biology, Environmental Protection, Science of Commodities) at the University of Life Sciences in south-eastern Poland. The study was conducted during a face-to-face interview using a self-designed questionnaire consisting of 11 questions. The great majority of respondents, regardless of the degree programme, marked the appropriate definition of animal welfare, confirming that a high level of FAW provides better quality of animals' life. The survey showed inconsistency of students' attitudes towards some species, which can be related to various levels and range of animal welfare education in the curricula of particular faculties. Animal Husbandry and Science of Commodities students evaluated horses ( $p = 0.0005$ ) and dairy cattle ( $p = 0.04$ ) welfare significantly higher than other student groups and it is probably due to their more specific knowledge about the production/use of particular farm species. This response suggests that life sciences students reflect a relatively high degree of knowledge concerning animal welfare issues. However, there are some areas where FAW education should be improved regarding behaviour and welfare issues of particular groups of farm animals. Moreover, the survey on students' attitudes can be helpful for adequate development of education contents in the programmes of particular faculties.

**Key words:** animal welfare, attitudes, education, farm animals, students

#### INTRODUCTION

Although consumers' perception and knowledge of animal welfare varies among European countries, the importance of animal welfare is well generally recognized by EU citizens. They assigned, on a scale of 1–10, an average rating of 7.8 to the question "How important is it to you that the welfare of farmed animal is protected?" [EC 2005a, Martelli 2009]. A big cross-cultural study of attitudes towards animal welfare has been con-

ducted recently, in universities in 11 European and Asian countries [Philips *et al.* 2012]. This survey found that nationality had a major impact on students' attitudes towards animal welfare, whereas ethnic minority grouping generally did not. Philips *et al.* [2012] noticed that students from European countries had more concern for animal welfare than students from Asian countries which may be explained by differences in both, the financial status of respondents and the extent of legislation concerning animal use in the particular country. Awareness of animal welfare issues is especially affected by economic factors but also by the concern of young people and their educational level. Investigating people's attitudes towards animals has been an important step in researching how attitudes can predict behaviour towards animals [Azjen and Fishbein 1980, Levine *et al.* 2005].

The aim of this study was to examine the knowledge and opinions about farm animal welfare (FAW) aspects amongst students of various degree programmes at University of Life Sciences in south-eastern Poland who represent both potential consumers and future animal science and animal industry.

#### MATERIAL AND METHODS

The study involved a total of 199 students of four life sciences degree programmes: Animal Husbandry (AH,  $n = 48$ ), Biology (B,  $n = 41$ ), Environmental Protection (EP,  $n = 60$ ) and Science of Commodities (SC,  $n = 50$ ).

The study was conducted during face-to-face interview using a self-designed questionnaire consisting of 11 questions. The survey consisted of 10 questions with one answer allowed (questions 1–10) and 1 multiple-choice question (question 11). The questionnaire concerned the term animal welfare (question 1), kinds of animals characterized by the most insufficient level of welfare (question 2), different conditions/factors influencing animal welfare (question 3), levels of selected farm animal species' welfare (questions 5–10) and impact of appropriate level of animal welfare on animal's life and its product (question 11). In the question 4 respondents had to express their agreement/disagreement with the existence of dependency between a group of farm animals (with regard to species and type of their use) and their welfare level. If the answer was "yes", they had to evaluate welfare levels in particular groups of farm animals (dairy cattle, beef cattle, pigs, laying hens, broiler chickens and horses) using a 4-point scale: 1 = insufficient, 2 = fair, 3 = good, 4 = excellent and for this part of survey the descriptive statistics (Mean ( $X$ )  $\pm$  Standard Deviation (SD)) was used. The welfare levels of particular farm animals' groups were evaluated in questions 5–10 only by students ( $n = 131$ ) who answered "yes" to the question 4. The data was presented as a percentage for each degree programme. The one-way analysis of variance (ANOVA) and Mann-Whitney U test were used to determine the differences between the particular groups of students. All statistical analyses were conducted using Statistica package.

#### RESULTS AND DISCUSSION

In recent decades the term animal welfare is often used, however it is not always properly defined. According to Broom [1991] animal welfare means how an animal is

coping with the environmental conditions in which it lives. Hewson [2003] emphasized that the most widely accepted definition of animal welfare comprises the state of the animal's body and mind, and the extent to which its nature (genetic traits manifest in breed and temperament) is satisfied [Duncan and Fraser 1997]. Animal welfare refers to the state of the animal while the treatment of the animal is covered by other terms such as animal care, animal husbandry and humane treatment [Bousfield and Brown 2010].

#### **How would you define animal welfare?**

The great majority of respondents regardless of the degree programme ( $p = 0.76$ ) defined animal welfare as a physical and a mental well-being (state of body and mind) of animals kept in certain housing conditions. This response was given by all students of Animal Husbandry, 93% of Environmental Protection students and 88% by the students Biology and Science of Commodities. Only 7–12% of all respondents improperly considered animal welfare as an animal conservation or a sufficient amount of food and water.

However, the study on Polish consumers showed that only 44% of respondents aged 20–60 recognized the term of animal welfare and only about 25% of consumers have a knowledge of the conditions that can improve animal welfare level [Malak-Rawlikowska and Gębska 2010]. On the other hand, the survey involving 69 Polish cattle farmers showed that the majority of respondents indicated the right attitude towards animals. Dairy and beef breeders knew that the person in charge of a herd influenced cattle behaviour and production results [Sitkowska *et al.* 2012].

#### **What kind of animals in your opinion is characterized by the most insufficient level of welfare?**

Bousfield and Brown [2010] stress that there are almost as many animal welfare issues as there are species of animals which man attempts to manage. The respondents could choose from farm animals, pets, animals used for experimental testing, captive zoo animals and wild ones. The results of the survey showed that all student groups indicated farm animals followed by laboratory animals as being in danger considering their welfare level. The respondents' concern specifically pointed towards the well-being of farm animals that are used for food production. The responses also suggest that consumers' consciousness of some animal welfare issues depends on a combination of media interest, animal welfare charity action, science research, education and many other factors.

#### **What kind of conditions in your opinion influence the most insufficient welfare level in farm animals?**

The frequencies of responses to this question showed no significant differences ( $p = 0.07$ ) between particular student groups. The most frequent response was "transport conditions" and it was marked by 60–70% of EP and SC students and by 40–50% of AH and B students (Fig. 1). The high frequency of this response is probably due to its media presence (TV, Internet) and activities of animal rights and care organisations. Polish consumers surveyed in 2010 indicated that proper animal density and minimising the time spent in vehicles were the most important factors influencing animal welfare during transportation [Malak-Rawlikowska and Gębska 2010].

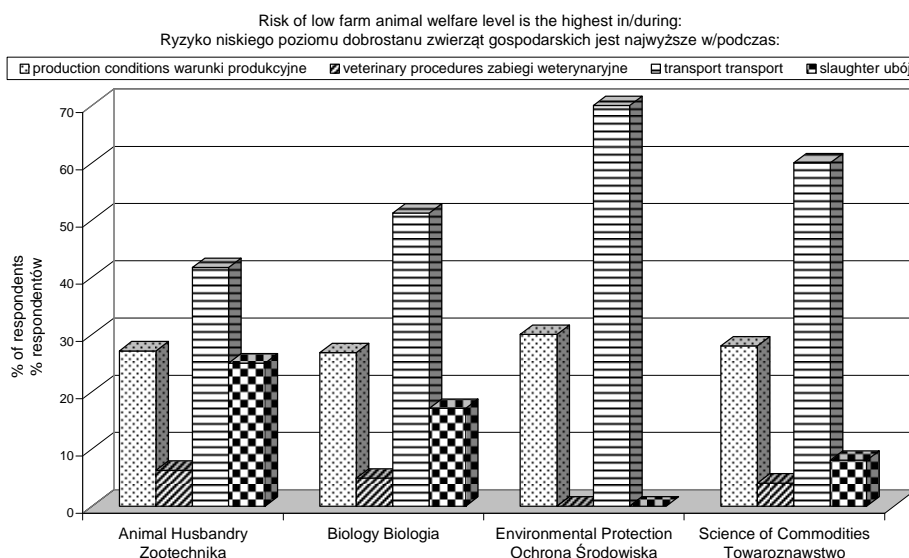


Fig. 1. Opinions of four groups of life science students ( $p = 0.07$ ) on conditions/factors increasing risk of low farm animal welfare

Rys. 1. Opinie czterech grup studentów kierunków przyrodniczych ( $p = 0,07$ ) dotyczące warunków/czynników zwiększających ryzyko obniżenia dobrostanu zwierząt

“Production conditions” came second having been chosen by 27–30% students as having strong impact on farm animal welfare. 25% of AH students and 17% of B students think that “slaughter conditions” increase risk of insufficient level of animal welfare while none of EP group respondents marked this response. The results of European and Italian surveys on consumer perception of FAW showed that space allowance, presence of trained staff, humane transport and slaughtering were found to be the very important attributes of farm animal welfare [EC 2005b, Martelli 2009].

#### Do you agree with dependency between a group of farm animals (with regard to species and type of their use) and their welfare level?

Martelli [2009] reports that awareness of consumers with respect to FAW is tied to their direct knowledge of animal rearing conditions and systems. However, Serbian study showed that the most of the respondents (85.3%) were not adequately informed about how animals were treated on the farm [Veljković *et al.* 2015]. In our study 66% of all students declared that welfare level can be different according to animals’ species and the type of their use in animal production. Considering the degree programme, the most number of “yes” answers was by AH students (77%) and the lowest number by B and EP students (60%). There were no significant differences ( $p = 0.09$ ) between particular student groups.

#### What welfare level in your opinion is characterized by main farm animal groups/species?

In the opinions of consumers, the welfare of farm animals is judged differently for each species [Martelli 2009]. According to surveyed students broilers and laying hens followed by pigs are the groups/species for which animal welfare level is the lowest

(Tab. 1). It is in agreement with a general European survey [EC 2005a] and the survey of Polish consumers aged 20–60 [Malak-Rawlikowska and Gębska 2010] while responses from Italian consumers demonstrated fairly low interest of welfare improvement in pigs and avian species but a relatively greater attention being paid to bovine conditions when compared with the European average [Martelli 2009]. Results of Polish survey in 2010 showed that only 23% of the consumers gave a positive opinion about the welfare of broilers, while the welfare of dairy cows was rated as positive by more than 60% of respondents [Malak-Rawlikowska and Gębska 2010].

Table 1. Welfare level (in points according to scale of 1 – insufficient to 4 – excellent) in different groups of farm animals in opinion of students with regard to degree programme (the welfare levels of particular farm animals' groups were evaluated in questions 5–10 only by students who answered "yes" to the question 4)

Tabela 1. Poziom dobrostanu (w punktach według skali od 1 – bardzo niski do 4 – bardzo wysoki) różnych grup zwierząt gospodarskich w opinii studentów z uwzględnieniem kierunku studiów (poziom dobrostanu poszczególnych grup zwierząt gospodarskich oceniony w pytaniach 5–10 przez studentów, którzy odpowiedzieli „tak” na pytanie 4)

Group of farm animals Grupa zwierząt gospodarskich	Animal Husbandry Zootechnika n = 37	Biology Biologia n = 25	Environmental Protection Ochrona Środowiska n = 36	Science of Commodities Towaroznawstwo n = 33	p
	X ±SD	X ±SD	X ±SD	X ±SD	
Horses Konie	3.03 <sup>a</sup> ±0.91	2.28 <sup>b</sup> ±0.78	2.31 <sup>b</sup> ±0.66	2.81 <sup>a</sup> ±0.85	0.0005
Dairy cattle Bydło mleczne	2.44 <sup>a</sup> ±0.74	2.24 <sup>b</sup> ±0.43	2.19 <sup>b</sup> ±0.62	2.74 <sup>a</sup> ±0.70	0.04
Beef cattle Bydło mięsne	2.22 ±0.81	2.28 ±0.83	2.06 ±0.57	2.36 ±0.54	0.48
Pigs Świnie	2.18 <sup>a</sup> ±0.64	1.76 <sup>b</sup> ±0.51	1.84 <sup>b</sup> ±0.64	2.12 <sup>ab</sup> ±0.69	0.04
Laying hens Kury nioski	2.08 ±0.97	1.60 ±0.69	1.78 ±0.58	1.94 ±0.89	0.22
Broiler chickens Kurczęta mięsne	1.94 <sup>a</sup> ±0.84	1.56 <sup>b</sup> ±0.57	1.67 <sup>b</sup> ±0.58	1.94 <sup>ab</sup> ±0.79	0.04

Means with different superscripts within a row are significantly different  
Średnie oznaczone różnymi literami w wierszach różnią się istotnie

In our study the great majority of students perceived that the welfare level in horses is the highest comparing with the other groups of farm animals. In some species' (horses, dairy cattle, pigs and broiler chickens) there were significant differences among particular student groups (Tab. 1) regarding welfare level evaluation. Our survey showed the inconsistency of students' attitudes towards some species and it can be related to various levels and range of animal welfare education in particular degree programmes. For example, AH students attend two obligatory courses: Animal Welfare and Animal Etholo-

gy, while B students have one obligatory course on Animal Ethology, EP students – one optional course on Animal Welfare and Ethology and SC students attend two obligatory courses: Ethological Aspects of Animal Production and International Animal Trade. Animal Husbandry and Science of Commodities students evaluated horses ( $p = 0.0005$ ) and dairy cattle ( $p = 0.04$ ) welfare significantly higher than other student groups (Tab. 1) and it is probably due to their more specific knowledge about production/use of particular farm species. Broilers' and pigs' welfare were rated as higher by AH/SC students in comparison to the other groups.

Veterinary students, surveyed at one US College, showed that there are inconsistencies in respondents' perception of cognition and humaneness across species, especially with respect to farm animals [Levine *et al.* 2005]. This survey revealed that veterinary students aspiring to work with farm animals considered more procedures to be humane for all species than did students aspiring to work with small animals. The studies examining people's knowledge and opinions on animal welfare have been helpful for exploring how attitudes of stockpersons, scientists or students can predict their behaviour towards farm animals [Azjen and Fishbein, 1980, Hemsworth *et al.* 1994, Coleman *et al.* 1998, Heleski *et al.* 2004, Levine *et al.* 2005, Sitkowska *et al.* 2012]. Our studies are in agreement with Heleski *et al.* [2004] statement that gaining an awareness of various stakeholders' attitudes (e.g. animal scientists, veterinarians, producers, and consumers) toward farm animal welfare will assist animal welfare scientists in knowing which research topics to emphasize and where critical gaps in accessibility of knowledge exist.

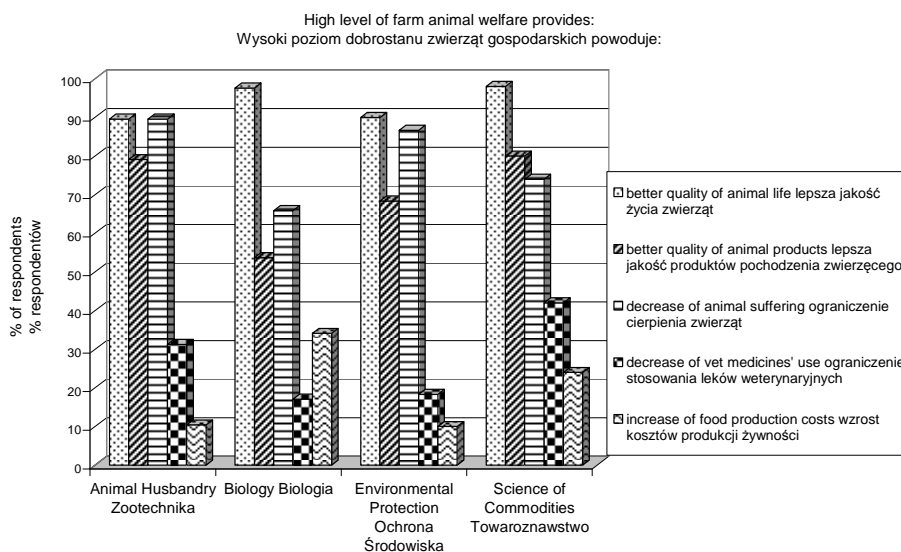


Fig. 2. Opinions of four groups of life science students ( $p = 0.42$ ) on consequences of high farm animal welfare level

Rys. 2. Opinie czterech grup studentów kierunków przyrodniczych ( $p = 0,42$ ) na temat konsekwencji wynikających z wysokiego poziomu dobrostanu zwierząt gospodarskich

### **What consequences in your opinion does high animal welfare level lead to?**

In a multiple-choice question the great majority (94%) of respondents (regardless to degree programme,  $p = 0.42$ ) chose “better quality of animal’s life” (Fig. 2). 70–80% chose also “decrease of animal suffering” and “better quality of animal products”. The responses showed that students have proper basic knowledge about animal welfare issues. Only about 20–30% of students answered that high level of FAW leads to “decreased vet medicines’ use” because of animals’ better health status but also “increase of food production costs” which should be a topic for future discussing in animal welfare awareness study. However, the study on Polish consumers showed that only 23.6% of respondents aged 20–60 recognized the benefits of high animal welfare [Malak-Rawlikowska and Gębska 2010]. In the opinion of these respondents the most important benefits are better quality of animal products, better life of animals (freedom from thirst, hunger and fear), better veterinary care, more modern rearing methods, more humane animal treatment, better animal productivity, longer life of animals and lower veterinary costs. 23% of Polish consumers, surveyed in 2010, indicated that higher welfare requirements lead to increase of food prices, increased production costs, decreased production level and reduced competitiveness [Malak-Rawlikowska and Gębska 2010].

### CONCLUSIONS

The results presented in this study showed that life sciences students reflect a relatively high degree of knowledge concerning animal welfare issues. However, there are some areas where FAW education should be improved regarding behaviour and welfare issues of particular categories of farm animals. Moreover, the survey studies on students’ attitudes have implications for educational process and can be helpful in the adequate choice of education contents in the particular degree programmes.

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**Streszczenie.** Celem badań było określenie poziomu wiedzy i poznanie opinii 199 studentów na temat dobrostanu zwierząt gospodarskich, z uwzględnieniem kierunku realizowanych studiów (zootechnika, biologia, ochrona środowiska, towaroznawstwo) na uniwersytecie przyrodniczym w południowo-wschodniej Polsce. Badania przeprowadzono w formie ankiety wg własnego projektu, zawierającej 11 pytań. Zdecydowana większość studentów bez względu na studiowany kierunek wykazała znajomość prawidłowej definicji dobrostanu zwierząt, jak również wskazała, że wysoki poziom dobrostanu gwarantuje optymalną jakość życia zwierzęcia. Przeprowadzone badania wykazały pewną rozbieżność postaw studentów wobec niektórych gatunków zwierząt, co może być związane z różnym poziomem i zakresem edukacji dotyczącej dobrostanu różnych gatunków zwierząt na poszczególnych kierunkach studiów. Studenci zootechniki i towaroznawstwa ocenili istotnie wyżej dobrostan koni ( $p = 0,0005$ ) i bydła mlecznego ( $p = 0,04$ ) w porównaniu z innymi grupami studentów. Prawdopodobnie wynika to z ich specjalistycznej wiedzy dotyczącej produkcji/użytkowania wymienionych gatunków zwierząt gospodarskich. Przeprowadzone badania potwierdziły stosunkowo wysoki poziom podstawowej wiedzy dotyczącej problematyki dobrostanu zwierząt u studentów kierunków przyrodniczych. Jednakże w ramach edukacji powinno się uwzględnić w szerszym zakresie zagadnienia behawioru i dobrostanu poszczególnych grup zwierząt gospodarskich. Ponadto wyniki przeprowadzonych badań mogą posłużyć do bardziej adekwatnego doboru treści kształcenia na poszczególnych kierunkach studiów.

**Słowa kluczowe:** dobrostan zwierząt, postawy, edukacja, zwierzęta gospodarskie, studenci