

ANIMAL WELFARE AND ECONOMIC EFFECTIVENESS IN BULGARIA AND EU FARMS

BUNĂSTAREA ANIMALĂ ȘI EFICIENȚA ECONOMICĂ ÎN FERMELE DIN BULGARIA ȘI UE

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In this study the relationship between economic effectiveness and animal welfare standards is investigated in the case of the pig and cattle breeding. The issue is of importance in order to assess economic viability of livestock breeding while applying animal friendly practices. This paper considers animal welfare standards in national regulations in pig breeding and cattle breeding, production under animal welfare and economic effectiveness in the specified sectors. It is pointed out the conditions which the legislation lays down to ensure better animal welfare. The discussion continues with detailed examination of the applying these standards in the production process. At the end of the paper are presented main conclusions concerning economic efficiency under animal welfare standards. The aim of the paper is to analyse the interactions between the economic effectiveness of livestock production and animal welfare in the pig breeding and cattle breeding.

Keywords: Animal welfare; Economic effectiveness; Pig breeding; Cattle breeding

Introduction

From economic point of view farm animals are considered as one of the resources necessary for livestock farming. They are used to produce food for human consumption. In the production process raises the question about farm animal welfare - the care and the manner in which the animals are treated. These concerns reflect in a number of laws and regulations about the animal welfare. In EU animal welfare legislation recognizes “animals as sentient beings and requires that full regard is paid to this in formulating and implementing the Community's policies, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage”, (The EC Treaty's Protocol on Protection and Welfare of Animals - <http://www.eurogroupanimalwelfare.org/policy/pdf/awapbriefepmay2006.pdf>). Farm animal welfare standards have an impact on production costs in livestock farming respectively on the farm economic effectiveness. From this point of view the realization for the main economic stimulus for the producers - profit maximization it is crucial to give the animals a certain care to their “welfare”. *The aim of the paper is*

to analyse the interactions between the economic effectiveness of livestock production and animal welfare in the pig breeding and cattle breeding.

In the process of economic development, demand for animal welfare standards increases. Public concern in EU respectively in Bulgaria as a member state, leads to higher animal welfare standards which in most cases lead to additional costs. Animal welfare and production costs relationship is complex because of the conflict between the animals' benefit and human benefit. Raising welfare standards result in cost increase, mainly arising from increased feed, labour and land costs which are incurred for more extensive systems. On the other hand it is possible the improved animal welfare to decrease the costs for instances measures to decrease disease and mortality. Farmers could compensate the increased costs by increased income, obtaining price premiums for products that are perceived to be associated with high welfare.

Animal welfare in pig breeding and cattle breeding – standards in national regulations

Bulgarian animal welfare legislation is closely harmonized with the European. There is a Codex for humane attitude toward animals, which is directed to humane attitude and living conditions for farm animals, hygiene, pest and illnesses control. The aim of the Codex is to guarantee the production of safe animal production and in this order is from an exceptional importance for the health of farm animals.

Specific rules continue to apply to: laying hens, calves, pigs and broilers in EU (including in Bulgaria), http://ec.europa.eu/food/animal/welfare/farm/index_en.htm. For the aim of this study we discuss animal welfare in pig and cattle breeding.

➤ Calves

The Bulgarian legislation prohibits the use of confined individual pens after the age of eight weeks. The Regulations sets out minimum dimensions for individual pens and for calves kept in group. Calves are not to be tethered (except under very specific circumstances) and must be fed according to their physiological needs.

➤ Pigs

The regulations laying down minimum standards for the protection of pigs. According to the rules it is prohibited the use of individual stalls for pregnant sows and gilts during a period starting from 4 weeks after service to 1 week before the expected time of farrowing and the use of tethers; it is necessary to improve the quality of the flooring surfaces; to increase the living space available for sows and gilts, to guarantee the sows and gilts permanent access to materials for rooting; to introduce higher level of competence on welfare issues for the stockmen.

Bulgarian legislation in the sphere of animal welfare requires piglets to be weaned until they are at least 4 weeks old. The legislation also lays down a number of other conditions to ensure better animal welfare, such as lighting, litter, feeding, and ventilation requirements.

Production under animal welfare

1. Pig breeding

In the most intensive systems, the key objective is to produce more piglets per a year. So they are weaned up to 3 or 4 weeks. The problem with weaning piglets as early as possible is that they are not mature enough and their digestive system is not adapted to anything but mother's milk and they often suffer from post-weaning enteritis, diarrhoeas, which needs the use of antibiotics. Early weaning makes them more acceptable to diseases (Arey et al., 2006). For this reason the EU legislation (including Bulgarian) in the sphere of animal welfare requires piglets to be weaned until they are at least 4 weeks old. Bulgarian legislation allows to be weaned at 3 weeks if the pens are disinfected and cleaned.

To become piglets 5 kg at 21 day after birth is necessary to feed the sow with enough, well balanced forage in order to produce milk. When the weaning piglets are fed well they can realize more than 0.300 kg average daily gain during the 21 day weaning period.

The level of feeding is one of the indicators of animal welfare. The influence over the mortality of pigs has: the system of pig-breeding in the farm; crushing of young piglets, zoo hygiene; feeding; management activities; densities of animals; disease prevention; breeding. The genetic inheritance is of exceptional importance for the high live weight of pigs at the end of finishing period, for the effective use of forages and the quality of meat.

In the next 3 figures we perform the influence of weaning age on weaning weight and weight at 42 days post weaning (Fig. 1); the influence of weaning age on finishing mortality (Fig. 2) and the influence of weaning age on finishing weight (Fig. 3).

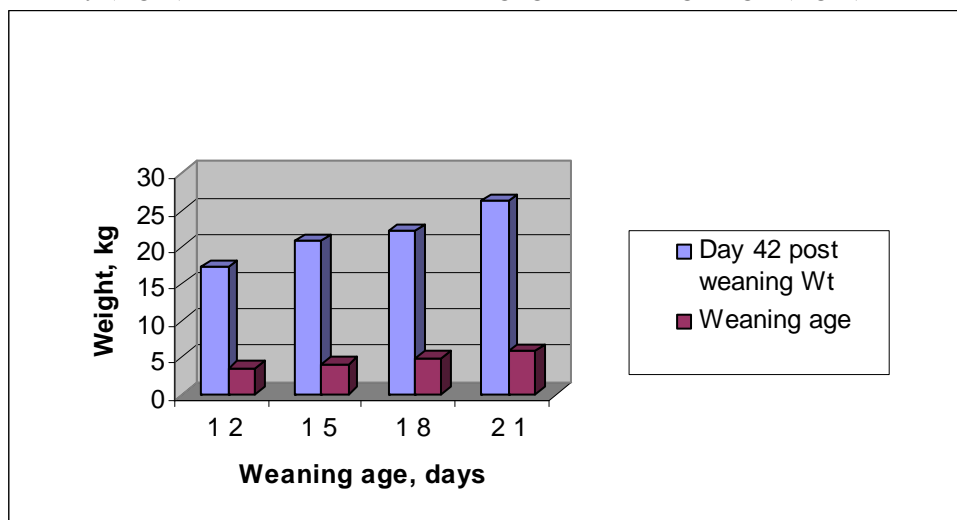


Figure 1. Influence of weaning age on weaning weight and weight at 42 days post weaning

Source: *Effect of Weaning Age and Weight on Reproduction and Growth*,
Dr. M. Todd See, <http://www.porkinfo.osu.edu/documents/ToddSee3-14-07.pdf>

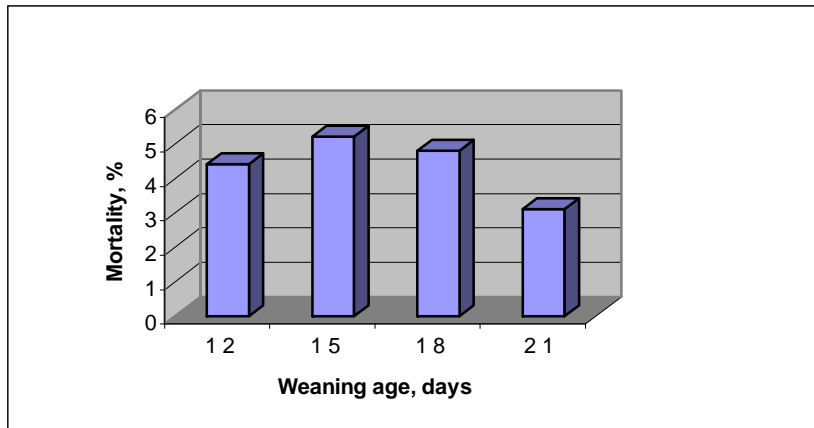


Figure 2. Influence of weaning age on finishing mortality
 Source: *Effect of Weaning Age and Weight on Reproduction and Growth*, Dr. M. Todd See, <http://www.porkinfo.osu.edu/documents/ToddSee3-14-07.pdf>

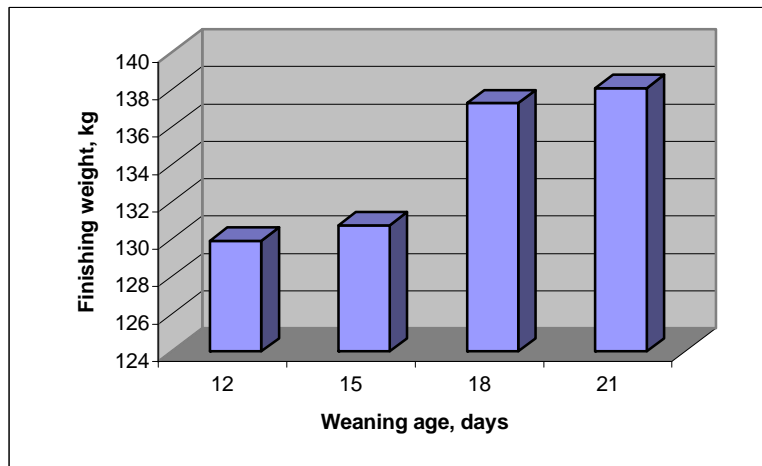


Figure 3. Influence of weaning age on the finishing weight
 Source: *Effect of Weaning Age and Weight on Reproduction and Growth*, Dr. M. Todd See, <http://www.porkinfo.osu.edu/documents/ToddSee3-14-07.pdf>

The data show that piglets, which are weaned 21 days, have highest weight at 42 days post weaning, highest finishing weight and lowest finishing mortality. From the represented data we can calculate the additional kg of live weight, which can be produced if the piglets are weaned 21 days compared to 12 days weaning period. The pigs are fattening 6 months.

2. Cattle breeding

Cow's welfare is one of the basic factors from which depends economic effectiveness of cattle breeding. The type of floor and the size of individual beds for rest of cows have direct influence over the duration of the rest, traumas of the cow's udder, the cleanliness of animals and their productivity. The most important requirement is the beds to be dry and easy to handle. The bed must allow the cow to lie and stand up easily, but tight enough to prevent the cow to turn around.

Main factors and technological elements, from which depends the economic effectiveness of milk production are: level of milk productivity, environment, concentration of the production, the housing system, feeding, milking, and cleaning the manure and management.

Temperature influences the level of metabolic processes and thermoregulation (**Armstrong, 1994; Armstrong et al., 1998**).

The other factors, from which animal welfare and production depends are: the intensity and duration of the light, microclimate conditions, ventilation, overcrowding, stress factors, nutrition, management and economic conditions of farms (**Batchelder, 2000; Bolinger et al., 1997; Chastain, 2000; Chastain et al., 1997; Dahl, 2000; Fox et al., 1998; McDowell et al., 1969; Harizanova, 2008**).

Main factors, which have an impact over the concentration of the production processes are the intensity of the forage production, the technology of breeding the animals, the level of mechanization, the capacity of buildings, the production capabilities of cows, the presence of water and energy sources, the qualification of the staff, state policy.

The housing systems have an important influence over the type of buildings, equipments, mechanization and automatization of production processes, the system of foraging, milking equipments, cleaning and keeping the liquid and solid parts of the manure, animal welfare and comfort, labour conditions.

Economic effectiveness

1. In pig breeding

Farm animal welfare considered as a care and a manner in which the animals are treated refer to the efforts which animals make in order to cope with the environment. In this respect Pierre Mormude and Magali Hay overview the concepts about adaptation and stress in pig breeding, <http://www.agriculture.de/acms1/conf6/ws5a.htm>, on the base of the study of early weaning (6 days) pigs. As it was shown on the Fig. 1 early weaning reduce the growth rate of piglets, because of the low ingestions of dry food during the first days after weaning. The above mentioned authors make conclusion that early weaning induces a short-lasting stress, not much different from classical weaning at 3-5 weeks. Adhere to the animal welfare legislation the piglets could be weaned until they are at least 4 weeks old. But from economical point of view this increase production costs (because of the feed and labour costs) of the farmers respectively reduce the farmers' income.

From other point of view poor welfare of the sows lead to the mastitis-metritis-agalactia (MMA) syndrome which is consider as the biggest limiting factor in piglet production. Hence improving animal welfare increases the profit possibilities and economic effectiveness in pig production.

2. In cattle-breeding

Poor welfare of cows may lead to sub clinical mastitis, which leads to decrease of milk quality and milk production in accordance to the content of somatic cells (SC) in 1 ml of milk: 300 000 SC lead to 6% decrease of the produced milk; 100 000 SC – 10%; 2.7 million SC – 16%; 8 million – 24% (Rusev, 1984).

Mastitis leads to loss of milk, but in the same time animals need to be treated, which increases the variable costs of the farm.

For the prevention of sub clinical mastitis is necessary the farmer to keep strict hygiene in the stalls, to disinfect milking equipments, to take adequate measures to prevent poor welfare of cows.

Sub clinical mastitis easily become clinical and can spread over the whole herd, which has a catastrophic effect for the farm business.

The mastitis decreases revenues of the farm with the same per cent as it reduces the milk productivity.

Conclusions

Animal welfare and production costs interaction in pig and cattle breeding is complex and ambiguous. Nevertheless if the farmers endeavour to be competitive and to deliver higher standards products should improved the animal welfare in their farms.

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