

STUDY REGARDING RABBIT WELFARE INTENSIVELY BRED

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Abstract

This paper aims to disseminate the wider application of knowledge on the welfare of rabbits, considering the majority of the factors that contribute to it. Its development was based on scientific literature, the European legislation on the protection and welfare of animals and the Code of good practice for growing rabbits. To ensure the welfare of animals a number of factors that contribute to the comfort of their condition should be considered, such as nutrition and optimum microclimate factors, selection of parent lines for calm temperament and maternal skills, specific accommodation conditions operating system used, appropriate sanitation, eliminating stress caused by improper handling, noise etc. According to these data, harboring rabbits should be made in cages of welded wire mesh whose floor has to be flat, not thinner than 2.032 mm, mesh size 19x19 mm in case of square mesh and 75x12,5 mm, if rectangular. The floor made of mesh wire with too thin mesh and too big or rough welds can cause feet problems. It is recommended that for a normal position of the animal in the cage so that they can keep their ears erect and make install, the height of the cage should be 45 cm and the temperature of the shelter between 10-20°C depending on the category of animal. Knowing and applying of all welfare conditions in addition to eliminating the discomfort and stress also influences the quantity and quality of rabbit products. Given the literature is still quite poor and fragmented, it is necessary to continue research into breeding and exploitation of rabbits, their handling during transport and slaughter, and improving their welfare standards.

Key words: Rabbit; welfare; intensive breeding, Code of good practice.

INTRODUCTION

House rabbit can meet the basic requirements of human existence, namely: food through its flesh and clothing through the fur and wool by which it provides. It also produces agricultural fertilizers and it is particularly useful as laboratory animal and in scientific experiments. He is also the subject of sporting passions in exhibitions - contest (Georgeoni et al., 1984). If in 1975 the world production of rabbit meat was estimated at about 120,000 tones, in 1992 it was about 300,000 tones. In 1994 world production of rabbit meat stood at approx. 1.597 million tons, out of which 637,000 t was achieved in the traditional system, 528,000 t in intermediate or semi-intensive system and 435,000 t was obtained in intensive or commercial systems (Lebas and Colin, 1994). In 2012 world production of rabbit meat was estimated at 1.83 million tons, increasing by 14.2% the last 5 years (FAOSTAT, 2014). In Romania, in 1990, rabbit meat production was 10,625 t, then it decreased rapidly, so in 2000 it was by 71.77% lower, and in 2007 with 97.5% lower compared

with production in 1990 (after FAO data, 2009). Until year 1999 our country exported rabbit meat mainly to Italy, France, Germany, and starting 2003 the market demand for this product was provided mainly by imports.

The rabbit, due to its extraordinary capacity of production and reproduction, can make an important contribution in the fight for increased of animal protein production worldwide (Baselga and Garcia, 2002). Research regarding rabbits welfare are still fragmented and were the preoccupation of a small number of researchers, who often did not take into account the commercial production aspects involved. In addition, many existing data, unlike other species of domestic animals, are obtained through observations on wild rabbit and no on the domestic ones.

MATERIALS AND METHOD

In preparing the paper, a series of bibliographical material consisting of books and journals, specific research papers and specialized websites have been studied.

RESULTS AND DISCUSSIONS

The most important aspects which compete in ensuring the welfare of intensively bred rabbits are the ones regarding choice of the breed, meeting the requirements of their housing and nutrition.

1. Breeds of rabbits raised in intensive system

In the world so far are cataloged about 200 existing breeds of rabbits (Popescu Micloșanu, 2011). They are classified as follows:

Depending on body weight in adulthood:

- Large breeds (over 5 kg: Flemish Giant, German Giant, French Lop, White or Termond Giant, German Checkered Giant);
- Medium Breeds (3-5 kg: Chinchilla, Viennese Blue, Silver French, Californian, New Zealand);
- Small breeds (2-3 kg: English Spot, Havana, Dutch);
- Dwarf breeds (less than 2 kg: Hermelin, Miniature Lop).

Depending on hair length:

- short-haired breeds of rabbits (Rex);
- middle-haired breeds of rabbits (most breeds);
- breeds of rabbits with long hair (Angora).

According to the main production there are breeds for meat, fur and mixed.

For meat production especially large and medium breeds are raised. Large breeds have the advantage of reaching in the adult stage weights exceeding 5 kg. Medium breeds are more precocious, they have high growth rate during youth, and a very good feed valorization.

In general, at birth, rabbits weigh between 50 and 70 g. At a month old they already have between 400 and 700 g. In intensive raising rabbits weaning occurs at the age of 28-35 days. Depending on breed, rabbit slaughter for meat production is made at 3-4 months of age (Iancu, www.crescatoriede iepuri.ro).

2. Requirements for rabbits housing

Rabbit cage size in industrial system raising should ensure the minimum area shown in Table 1 (after Code of Practice for the Welfare of Animals, Australia, 2003).

Table 1. The minimum surface required for growing rabbits (Code of Practice for the Welfare of Animals, Australia, 2003)

Breeding in cages	Minimum surface
Female rabbit with nestling up to 5 weeks	0.56 sqm total surface
Female rabbit with nestling up to 8 weeks	0.74 sqm total surface
Rabbits between 5 – 12 weeks	0.07 sqm per capita
Rabbits above 12 weeks	0.18 sqm per capita
Female rabbits and male rabbits for reproduction	0.56 sqm per capita

In intensive raising rabbits are maintained in closed housing, in welded wire mesh cages whose floor must be smooth and appropriate mesh size in accordance with animals size (according to animal protection law).

In case of square wire meshes, their side shall not exceed 19 x 19 mm and for rectangular mesh size shall not exceed 75 x 12.5 mm.

Cages for rabbits older than 12 weeks will have a height of at least 45 cm, or one that allows rabbits to stand in upright position, with erect ears.

The diameter of the wire used to manufacture the net shall be not less than 2,032 mm. The wire mesh will be smooth; all protrusions resulting from the manufacturing process are removed, so as not to cause feet problems. When it is necessary, because of the weight, that rabbits to be raised on continuous floor, a clean litter will be ensured.

Farrowing nest must have a minimum length of 30 cm and a minimum floor surface of 0.08 m².

Drop drinkers have to be located approximately 25 cm from the floor of the cage, so rabbits can have easy access to them.

In order to prevent uncontrolled growth of the incisors, which can lead to self-infliction, pieces of wood for stimulation of gnawing will be made available.

The recommended temperature in intensive raising is between 14-20°C depending on the category of animals. Thus, it is recommended to have 18-20°C in maternity and for youth raising 14-18°C.

The limits of variation of temperature should be between 10-25°C, otherwise reproduction is affected (Popescu-Micloșanu, 1998).

Verga (2007) states that the ideal temperature in rabbits raising shelter is 16-21°C for female and

12 -16 °C for males rabbits and relative air humidity should be 60%.

Rabbits are very sensitive to high temperatures. Thermal stress leads to reduced feed consumption (Morrow-Tesch et al., 1994), increased susceptibility to disease (Kamwanja et al., 1994) or affects the efficiency of breeding activity (Marrai and Rashwan, 2004).

In intensive - industrial system, rabbits are raised most frequently in cages batteries installed on one level and in tiered batteries partially or completely overlapped.

The batteries on one level (horizontal or flat-deck) are most suitable for breeding animals. They are used for fattening as well, especially in colony, in bigger cages. They provide great comfort for the animals and for the caregiver for the supervision and handling of animals, it does not require complicated ventilation and they have a higher durability. Disadvantages can be mentioned: low density of animals per built unit area, which raise the investment, although cages have quite low price.

Vertical batteries (all overlapping or compact) have cages placed on 2-4 levels. It allows the installation of more cages within a given area, low investment cost per animal, but it requires more complicated ventilation of the housing because of the high density. Light distribution is uneven for breeding female rabbits; access to cages is difficult on some levels. As a result, the rabbits from lower or higher levels are not as well cared for, watched, like the rabbits on more accessible levels, handling of animals is more difficult, respiratory diseases problems and cleanliness in the farm are increasing, a faster wear of materials is encountered.

Using floored batteries is less used worldwide (Popescu Micloșanu, 2011).

Because rabbits spend much time on the cage floor, this is a very important factor in the welfare of rabbits (Szendro and Luzi, 2006; Verga et al., 2006). Drescher (1992) mentions that rabbits spend less time on the floor of wire mesh compared to other types of floor. On the other hand, Trocino A. et al. (2004) demonstrated in an experiment that no significant differences can be found in terms of live weight between rabbits reared on wire mesh floors and on galvanized steel bars floor. A preference test showed that rabbit's bunnies

prefer rubber floor, but once they age they prefer plastic floor (Matics et al., 2007). On the other hand, the plastic floor, due to feces and high humidity can lead to increased risk of coccidiosis (Princz et al., 2009).

In an experiment conducted in weeks of growth 4-11 on a group of 24 white New Zealand rabbits breed, Abdelfattah et al. (2010) found that the use of plastic or rubber affects the drinking and agonistic behavior without affecting other behaviors or growth performance in the last three weeks of the experiment, but it also reduces the incidence of eyes and ears injuries of rabbits and it reduces chronic stress measured by total and differential white blood cell number in rabbits.

The authors concluded that the use of plastic or rubber material as cage floor has advantages in terms of animal welfare.

3. Contention and proper handling of rabbits

Contention and handling of rabbits is done by grasping the elastic range skin from the neck with one hand and with the other supports hindquarters, to avoid sudden movements that can cause injuries. It is not recommended to content rabbit by the ears, which is very painful and may cause ear problems.

One of the key success factors in the intensive - industrial growth is the rational nutrition. This should be done on the basis of complete mixed feed and watering should be done at discretion, through automated systems.

4. Features regarding feeding rabbits reared in intensive system

Ration structure should allow supplying the required quantity and quality of nutrients for maintenance and production of various types of rabbits.

Physiological nutritional requirements are not sufficiently studied and there are large differences between different authors regarding the recommendations on the features that combined fodders should have (Stoica, 2001). Lebas (quoted by Frățilă et al., 1985) makes the recommendations on feed requirements for rabbits from Table 2.

Table 2. The minimum requirements for rabbits feed (Lebas, quoted by Frățiță et al., 1985)

Specification	MU	Youth 4-12 weeks	Lactating females	Pregnant and reproducing females	Unique fodder
Metabolizable energy	Kcal/kg	2400	2600	2600	2400
Crude protein	%	15	18	15	17
Lysine	%	0.60	0.75	-	0.70
Methionine + cysteine	%	0.50	0.60	-	0.60
Crude fiber	%	14	12	14	14
Fats	%	3	5	3	3
Calcium	%	0.50	1.10	0.80	1.10
Phosphorus	%	0.30	0.80	0.50	0.80
Vitamin A	UI/100 g	600	1200	1200	1000
Vitamin D	UI/ 100 g	35	35	35	35
Vitamin E	ppm	50	50	50	50

In the intensive growth system feed technology can use in a farm one, two, three or four fodder recipes (Popescu - Micloșanu, 1998).

Eating with fodder produced after a single recipe (with unique fodder) uses the same recipe as for maternity and for young stock for breeding and fattening.

This system is practiced in order to avoid confusion that can cause accidents in case of reversal of the feed administration on the other categories of animals. It is recommended for small farms with less than 200 breeding females. Two types of forage diet generally use a recipe for breeding females (type lactating female rabbits) and one for the other categories (young raising). It is recommended for farms with more than 300 female rabbits.

Three types of fodder diet use a broiler starter feed, fodder for broiler growth and fodder for adult animals.

In large farms with over 1.000-1500 breeding females 4 types of fodder can be used (young growing, female lactating rabbits, pregnant female rabbits, male and no pregnant females).

Front feeding line for broilers is 15 cm to 10 animals or 7-8 cm length of gutter when nourisher is used on both sides.

Given the industrial growth of rabbits, granulation of combined feed is a prerequisite because the rabbit presents an increased susceptibility to respiratory airways for powders, by granulation waste is removed and homogeneity of the mixture is stored. It is

recommended that the diameter of the grain is 3-5 mm, and the maximum length of 10 mm.

In libitum feeding an adult rabbit consumes 4-5 g combined fodder in about 30 rounds per 24 hours. Eating is more frequently at night rather than day (Stoica, 2001).

Food management considers food ad libitum in feeding of females with nestlings, broiler rabbits and young replacement animals up to 8 weeks. Female rabbits with nestlings in intensive breeding, consume 350-380 g/mixed feed /day and broiler rabbits 110-130 g/day. Other categories have restricted feeding. Thus, to maintain the condition of breeding, males in service receive 120-140 g/day of fodder, females without nestlings up to 120 g/day, youth replacement animals after 8-12 weeks of age maximum 140-150 g/day, pregnant female rabbits maximum 140 -150 g/day.

CONCLUSIONS

Raising rabbits in industrial system requires a unified technological system that ensures favorable conditions for expressing their productive potential. The aim is to obtain high yields of meat (number of products per female, per sqm. of shelter, per value of the investment) and good economic efficiency relative to total expenditure (Stoica, 2003).

In the intensive rearing of rabbits especially medium breeds and hybrids are recommended, which have the advantage of having a high growth rate and very good food recovery rate.

The minimum surface on which lactating female rabbits with nestlings are maintained should be approximately 0.56 m² at the age of 5 weeks. Between 5-12 weeks of age a surface of 0.07 m² per rabbit should be provided, and after the age of 12 weeks 0.18 m² per rabbit.

The batteries on one level (horizontal or flat-deck) are recommended especially for breeding animals. Compared to completely floored batteries, they provide greater comfort for the supervision and handling of animals, it does not require complicated ventilation and their durability is large. Their most important disadvantage is the low density of animals per built unit area, which raises investment unit.

Rabbit feeding must ensure the animal requirements on its quality and quantity, for

intensive raising appropriate granulated mixed fodder is recommended.

Since the literature on the welfare of domestic rabbits is still quite poor and fragmented, it is necessary to continue research into breeding and exploitation of rabbits, their handling during transport and slaughter, as well as improving their welfare standards.

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