

# GUIDELINES FOR MINIMUM STANDARDS ON RABBIT HOUSING IN GERMANY

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## ABSTRACT

The main welfare indicators to assess rabbit housing are mortality (unavoidable low), morbidity (unavoidable low), physiological parameters in the species-specific standard, species-specific behaviour and performance on a high level. The single housing of does with kits remains the main housing system in the near future which can be characterized by detailed measures and parameters. Growing rabbits are mainly kept in groups with a tendency towards pen housing with different kinds of enrichment (e.g. wooden sticks as gnawing material). In May 2007 guidelines for the housing of rabbits under the aspects of animal protection and welfare were published in Germany which are described in detail in the present paper. The minimum requirements for breeding and growing rabbits are summarized in two tables. Enriched cages should be used. The space for a breeding doe in single housing ranges between 2.000 and 4.800 cm<sup>2</sup> depending on body weight and the use of an elevated seat. If an elevated platform is used the floor space of the cage plus the space of the elevated seat plus the nest box space are added to available surface. The minimum height of a cage for the doe is 40, 60 cm respectively also depending on the use of a platform. The elevated seat in a height of 25 cm should have a space of 1.000 cm<sup>2</sup>. The size of the nest box is recommended with 800 cm<sup>2</sup> and a height of 30 cm. The minimum space per growing rabbit should be 700 cm<sup>2</sup> in groups up to 5 rabbits and 600 cm<sup>2</sup> in groups of more than 5 rabbits (per rabbit) with a stocking density of 40 kg/m<sup>2</sup>. The minimum height of the cage for growing rabbits is 35 cm. The diameter of the metal wire at the floor should be in minimum 3 mm. The width of slats should be in minimum 10 mm and in maximum 16 mm. The rabbits shall have permanent access to water of good quality. There are some guidelines regarding the animal-feeding place-ratio, the light program, the concentrations of ammonia and carbon dioxide in maximum and the frequency of daily controls of animal health and the technical function of feed and water supply and of microclimate.

**Key words:** Welfare indicators, Breeding rabbits, Growing rabbits, Space, Elevated seat.

## INTRODUCTION

Breeding and growing rabbits are kept to a large extent in intensive husbandry systems, mainly in cages with wire nets or slatted floor. The housing of rabbits is related to behavioural, hygienic, environmental and welfare aspects. From 2000 to 2005 an European research network worked on the COST action: "Multi-facetted research in rabbits: a model to develop a healthy and safe production in respect with animal welfare". The main results of the working group 2 "Welfare and housing" were published in the final book "Recent advances in rabbit science" edited by Maertens and Coudert (2006). Additionally, a scientific report exists on the multi-facetted impact of the current housing and husbandry systems on the health and welfare of farmed domestic rabbits given by the European Food Safety Authority (EFSA)([www.efsa.europa.eu/EFSA/Scientific\\_Opinion/ahaw\\_rabbits\\_report2.pdf](http://www.efsa.europa.eu/EFSA/Scientific_Opinion/ahaw_rabbits_report2.pdf)). It includes: the biology of rabbits, the current housing and management systems on commercial farms, nutritional aspects and many other topics. With regard to the specific European Convention for the protection of animals kept for farming purposes, a Standing Committee composed of representatives of the parties of the Convention is currently preparing a draft recommendation concerning the welfare of farmed domestic rabbits (*Oryctolagus cuniculus*). Except for the Netherlands, there are currently no statutory requirements for rabbit farming. In that country, Directives on the welfare in rabbit housing

exist since 2006, April 21. The requirements of breeding and growing rabbits on the housing are defined. So, minimal space requirements, cage sizes, floor quality, microclimate, light regime, access to water and feed and the management are defined. In May 2007, guidelines for the housing of rabbits under the aspects of animal protection and welfare were published in Germany.

The meanings of animal “welfare” are multiple and have been defined by many authors (see literature in Verga, 2000 and Hoy and Verga 2006). The main welfare indicators are listed in Table 1.

**Table 1:** Main welfare indicators for rabbits (after Verga, 2000; Hoy, 2005; Hoy and Verga 2006)

Indicator	
mortality	no or low (unavoidable)
morbidity	low (unavoidable) – pathologies, infectious factorial diseases
physiology	hormone levels, heart rate variation, immune reactions – physiological parameters should be within the species-specific standard
behaviour	ethogram, reaction to behavioural tests – species-specific behaviour
performance	growth, feed conversion, fertility rate – performance should be high

None or a low (unavoidable) mortality is the most important welfare criterium. Also, the health status of the rabbits is a main welfare parameter. The morbidity rate including infectious factorial diseases and injuries should be low and unavoidable. Hormone levels, heart rate variation and immune reactions can be used as an indicator of the appropriateness of the housing conditions but they have to be discussed only in their relationship with other parameters (behaviour, morbidity). Examples are given by Verga (2000). The practical problem is that those parameters cannot be measured directly in the rabbitry. Special technical equipment is necessary. Although the expression of “abnormal behaviours” (e.g. stereotypies) may indicate some problems in the animals, pawing on the floor or gnawing at the walls may also be considered “normal” behaviour in an inadequate environmental context. Other significant parameters of acute loading or stress may be evaluated by looking at other behaviours, such as feed intake, social and maternal behaviours (see literature in Hoy and Verga 2006). So long as the “normal” behaviour is known specific ethological observations can reveal whether altered behavioural parameters are caused by inadequate environmental conditions. A review on the nursing behaviour, the behaviour of kits, breeding does in cages and of growing rabbits is given in Maertens and Coudert (2006) and in González-Mariscal *et al.* (2007).

Parameters of performance (live weight development, feed conversion, fertility) can also be used as welfare criteria. Although a high performance is no proof of a high welfare level, a low performance is an indicator of problems in housing, environment and management.

Summarizing, housing of rabbits in conformity with animal welfare and protection means

- mortality no larger than the unavoidable;
- uninjured body;
- good health condition;
- normal species-specific behaviours;
- development of animals according to age and sex (Hoy, 2005).

Non-conform with animal protection are rabbitries where injuries, pain and avoidable sufferings occur in rabbits, which could be avoided with the necessary care and health-prophylactic measures (vaccination, medication, hygiene).

Thus, the following general requirements for the housing of rabbits can be summarized as follows:

- no pain, no avoidable suffering and no injuries caused by housing (floor, walls, equipment);
- protection against predators, ectoparasites and endoparasites;
- provision of feed and water according to the needs of rabbits (mostly ad lib);
- protection against adverse climatic conditions;
- removal of gases, dust and pathogenic germs from the rabbit house;
- a good handling of animals (safe and quick catching – no frightening, no injuries);

- separation of rabbits from their excrements by using perforated floors if possible (especially in the intensive housing);
- from time to time use of “all in – all out” with cleaning and disinfection;
- enriched housing system – e.g. 2<sup>nd</sup> floor/elevated platform for the rabbits.

The objective of the German branch of World Rabbit Science Association was to develop guidelines for the housing of rabbits considering the above animal protection and welfare criteria, as is presented below.

## **GUIDELINES FOR THE HOUSING OF RABBITS UNDER THE ASPECTS OF ANIMAL PROTECTION AND WELFARE IN GERMANY**

### **Foreword**

Although there are no common European rules regarding rabbit welfare, apart from those of laboratory animals (EC Directive 86/609, 1986), in many European Countries local guidelines on rabbit housing systems exist.

The basics for housing of rabbits in Germany is the German law for Animal Protection, especially the clauses 1, 2 and 2a (latest version: 2006). In this law, it is mandatory that those who keep an animal shall feed, care and keep the animal adequately, considering its nature and needs. The animals shall have the possibility to move as is appropriate for the species. The animals must not have pain or avoidable suffering or injuries caused by housing. The owner or the keeper of an animal shall have necessary knowledge on nutrition, care and housing conditions. There are no special definitions concerning the housing of rabbits. The German section of the W.R.S.A. (World Rabbit Science Association) has given (1991) some indications about the minimum space related to rabbits in intensive housing systems. In 2007, the German branch of World Rabbit Science Association replaced the guidelines for rabbit housing dating from 1991. The current guidelines consider the latest scientific results on the housing of rabbits considering their welfare, as summarized by Fernández-Carmona and Lopez (2006), Hoy (2006), Hoy and Verga (2006), Jordan *et al.* (2006), Ruis (2006), Szendrő (2006); Szendrő and Luzi (2006), Verga and Luzi (2006), Verga *et al.* (2006).

The use of enriched cages is recommended. The 2<sup>nd</sup> floor can be used by the doe as withdrawal and the room under the 2<sup>nd</sup> floor can be used by the kits as a hiding-place. The use of a perforated plastic pad (foot-rests) wedged on the wire is to be recommended when metal wire is used in the cage (its recommendation for growing rabbits is not yet established in view of the lack of research in this regard). Rabbits can choose between different materials for lying depending on room temperature and air velocity. The plastic pad must not obstruct the falling through of faecal drops and must be included in the cleaning and disinfection procedures.

### **Minimum requirements for housing breeding and growing rabbits in Germany**

The minimum requirements for breeding rabbits are summarized in Table 2. Enriched cages should be used allowing the rabbits to have access to material for engagement and – if possible – to an elevated platform. The elevated platform (the “third dimension”) for breeding rabbits seems to be more important than an enlarged cage size. It allows the does to jump away from the kits. Yet, further research is necessary to demonstrate the beneficial effects of adding a platform in a two-floor cage on the behaviour, hygiene, health and performance of does and kits. If there is no elevated seat the minimum space of the cage or the pen has to be enlarged following the requirements given in table 2. Lying in a stretched body position should be possible for all animals.

Enrichment belongs to the animal-friendly housing of rabbits. The material for engagement (e.g. gnawing sticks made of wood, iron chains) should hang within the cage. It was demonstrated in different investigations that welfare-friendly pens with a plastic platform, a hiding box and gnawing material had no negative effect on health and performance.

**Table 2:** Minimum requirements for breeding rabbits (German branch of WRSA, 2007)

	Space per rabbit (cm <sup>2</sup> )	Minimum height (cm)
up to 4.0 kg	2.000 * / 2.400	40 / 60 *
up to 5.5 kg	3.000 * / 3.600	40 / 60 *
>5.5 kg	4.000 * / 4.800	40 / 60 *
elevated seat	1000	25
nest box	800	30

\*If an elevated platform is used the floor space of the cage + the space of the elevated seat + nest box space are added to the available surface

Here are two examples for a doe with kits and a live weight of up to 5.5 kg to calculate the necessary space:

without elevated seat:  $3.600 + 800 = 4.400 \text{ cm}^2$

with elevated seat:  $3.000 + 1000 + 800 = 4.800 \text{ cm}^2$ .

The requirements for growing rabbits are given in the Table 3.

**Table 3:** Minimum requirements for growing rabbits (German branch of WRSA, 2007)\*

	Space per rabbit (cm <sup>2</sup> )	Minimum height (cm)
in groups up to 5 rabbits – per rabbit	700 cm <sup>2</sup> in minimum	35
in groups of more than 5 rabbits – per rabbit	600 cm <sup>2</sup> in minimum	35
growing rabbits	40 kg / 10.000 cm <sup>2</sup> in maximum	
	Further requirements	
metal wire - diameter	3 mm in minimum	
width of slats, minimum	10 mm	
width of slats, maximum	16 mm	

\*identical also to the Dutch directive

The rabbits shall have permanent access to water of good quality. There has to be in minimum one nipple waterer per cage or box in single housing. More than one nipple waterer should be used in groups of more than ten rabbits. The width of the feeding place has to be 6 to 8 cm, depending on the size of the rabbits, up to a live weight of 4 kg. For bucks the width of the feeding place should be 10 cm. If the rabbits are fed ad libitum the width of the feeding place can be reduced to half the width.

The nest box should be installed 3 days before kindling. A light schedule in windowless rabbitries has to be used with 8 to 16 hours light and 8 to 16 hours darkness in 24 hours with a light intensity of 20 lux. 20 ppm ammonia and 3.000 pp carbon dioxide (0.30 Vol.-%) shall be the maximum limits tolerated within the rabbitry. The animals' health and the correct functioning of feed and water supplies as well as the microclimate should be verified daily.

## CONCLUSIONS

The guidelines for minimum standards on rabbit housing in Germany entered in force on May 10, 2007. They are an orientation for the rabbit owners, for the advisors and for the state veterinarians who have to control rabbitries.

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