

## Examination of Free Choice of Rabbits among Different Cage-floors

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### SUMMARY

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Rabbits were placed in a block of cages with a floor-area of 2 m<sup>2</sup>. The animals could move freely among the cages, through swing doors. All the four cages were totally equal, they only differed in the floor (planked by OSB panel, plastic-slat, plastic-mesh or wire-mesh). 24 or 32 rabbits, weaned at 21 days of age were placed into the block. During the experiment (until 10 weeks of age) the free choice of rabbits among the cage-floors was studied weekly with the help of 24-hour video recordings.

The soiled and wet (by urine) planked-floor was chosen by fewer and fewer rearing rabbits after the first week. Placing both 24 or 32 rabbits into the block, the plastic-mesh floor was preferred. With the increase of age the choice of plastic-mesh, wire-mesh and plastic-slat floor became similar. The increase of both number and weight of rabbits in 1 m<sup>2</sup> influenced the acceptance of different floors. Rearing 32 rabbits together, the choice of the 3 preferred floor types became similar at 7.5 weeks of age, while rearing 24 rabbits in a group, it became similar only at 9.5 weeks of age.

### KEY WORDS

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rabbits, floor, free choice, video recording

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## INTRODUCTION

In the European market there is an increasing interest in products prepared from rabbits reared under traditional conditions. For the ideal housing of rabbits have to examined the different rearing methods also in terms of animal welfare.

Drescher (1992) observed behavioural problems in rabbits housed individually in cages and found alterations in their bones. In the experiment of Morisse et al. (1999) young rabbits spent the most part of their time on wire-mesh floor instead of straw deep litter. According to the results of Bessei et al. (2001) in case of free choice in higher temperature (>15-20 °C) rabbits preferred wire-mesh, while in lower temperature (<15 °C) they chose deep litter.

Most of the results published originated from different housing conditions, however the group lived in the same cage or pen during the total examination period. The behaviour and production of rabbits were compared in this way. Therefore no information could have been found about the preference of the given housing system or some elements of that. The best housing method can be found using free choice of rabbits among places and by the help of the observation of 24-hour video recordings. In this case rabbits will mostly choose the most comfortable place and they will also stay there.

The ideal floor type for rabbits is generally determined by the people's imagination ("empathy"). Although there are some data in the literature regarding the ideal housing of rabbits, but the studied floors were so different drawn taken on the basis of comparing the given floor types.

The aim of this experiment was to study the free choice of rabbits among different floors depending on their age and group size.

## MATERIALS AND METHODS

The experiment was carried out at the rabbit farm of the University of Kaposvár on Pannon White rabbits. The rabbitry had 16–17 °C average temperature, and 16L:8D lighting period. Rabbits received a commercial pellet and water ad libitum.

Rabbits were reared in two equivalent blocks of cages from weaning (21 days of age) until 10 weeks of age. Both cage blocks (2 m<sup>2</sup> floor-area) consisted of 4 cages of the same size (0.5 x 1 m floor-area). Every cage had a feeder of 0.3 m length and 4 nipple drinkers. Cages only differed in their floor:

- Planked floor: OSB panel
- Plastic-mesh floor: width of plastic-mesh was 4 mm, diagonals of parallelogram-formed mesh were 15 and 25 mm.
- Plastic-slat floor: width of striated plastic-slat was

30 mm, the distance between plastic-slats was 15 mm.

- Wire-mesh floor: diameter of wire-mesh was 2 mm, the hole-size was 10x50 mm.

The animals could move freely among the cages through swing doors (15x15 cm).

In the blocks of cages the behaviour of 24 or 32 weaned rabbits were studied. To avoid the decrease in the number of rabbits resulting from mortality, 20% more rabbits were placed into the cage blocks. On the day of examination (24-hour video recording) the surplus rabbits were taken out of the cages then after video recording they were put back.

Video recording was performed once a week. The equipment (techniques) used for recording and evaluating were the followings:

- Colour CCTV Camera: WV-CL 834/Panasonic
- Time Lapse Recorder: AG-6040/Panasonic

During the dark period (between 9 o'clock p.m. and 5 o'clock a.m.) 80-watt red bulb (1.5 m above the observed cages) gave light. The luminous intensity was 1 lux on the level of the cage-floor. Rabbits perceive this colour and luminous intensity such as dark, but this was sufficient for taking video recordings in the required quality.

During the evaluating procedure the number of rabbits on the different floors was registered every half-hour and the average of 24 hours was calculated. On the day of examination the consumed feed in cages of different floors was also measured.

## RESULTS AND DISCUSSION

### 24 rabbits per block of cages

Both the 3 and 5 weeks old animals preferred plastic-mesh floor (80% of the animals), while they avoided the planked floor (Fig 1).

From the age of 5.5 weeks more and more rabbits stayed on plastic-slat floor, later also on wire-mesh floor. The reason for this was probably that parallel to their growth the rabbits were obliged to chose other floor type, though the planked floor was avoided also in this period.

During the whole experiment plastic-mesh floor was the most preferred. Since the liveweight and body size of rabbits increased during the experiment and parallel to this, their space requirement was also grown, therefore the last week of the study rabbits stayed on plastic-mesh, plastic-slat and wire-mesh floor approximately the same extent. Only the planked floor was refused. The reason for this was that the planked floor was soiled and in spite of daily cleaning it became a wet (by urine) and disadvantageous place.

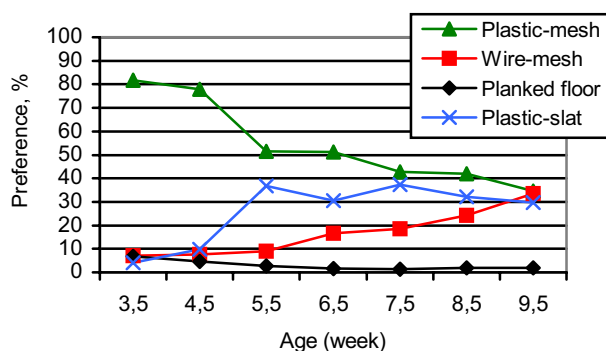


Fig 1. Choice rate of rabbits housed in a density of 24 rabbits/ cage block

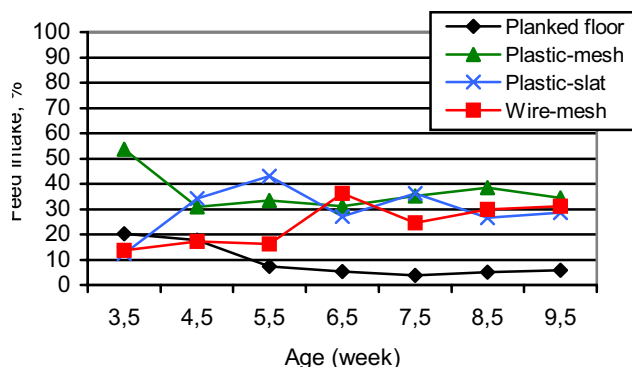


Fig 2. Feed intake rate of rabbits on different floor types (24 rabbits/cage block)

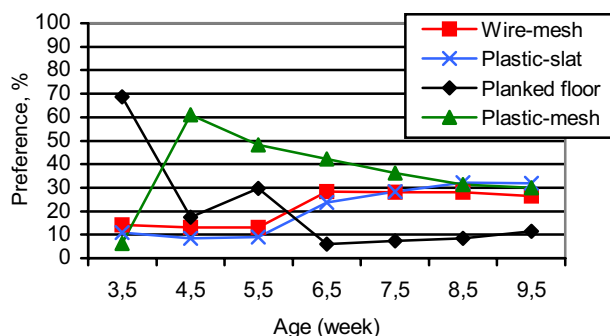


Fig 3. Floor choice rate of rabbits (32 rabbits/cage block)

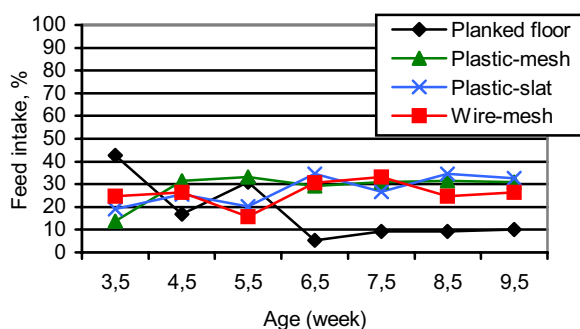


Fig 4. Feed intake rate of rabbits on different floor types (32 rabbits/ cage block)

The total floor-area of the three preferred floors was 1.5 m<sup>2</sup>. The recommended stocking density for fattening rabbits is 16 rabbits/m<sup>2</sup> (Lebas et al., 1986)

which corresponds to 24 rabbits/1.5 m<sup>2</sup>. Therefore, in case of acceptable floor, rabbits chose the stocking density considered ideal.

According to feed consumption the choice among different floors was more balanced. During the first week of the study the feeder of cage with plastic-mesh floor was preferred, while during the 2<sup>nd</sup> and 3<sup>rd</sup> week the preference of plastic-slat floor beside plastic-mesh floor could also be observed (Fig 2). After the 3<sup>rd</sup> week the feed consumption of rabbits became similar on all the three floors except the planked floor. Therefore, during the active feeding period the choice among the three floors became similar already at younger ages (6.5 weeks of age). The soiled planked floor was disadvantaged thus rabbits did not choose this urine-wet floor even if they were taking up feed. However by the end of the fattening period the planked floor was chosen by less than 1% of the rabbits, while in the feed consumption this value reached 5-6%.

### 32 rabbits per block of cages

In the beginning of the experiment rabbits preferred planked floor (Fig 3). The cause of contradiction between groups of 24 and 32 rabbits is simply that of 3 and 4 weeks old rabbits like to huddle together and to be in one cage (Matics et al., 2002). This is independent of floor, which is randomly chosen from the preferred plastic-mesh floor and planked floor.

Later the reason for refusal of planked floor was that it became soiled by urine shortly over again in spite of daily cleaning. Thus rabbits preferred to stay on one of the other three floor types.

Choice of plastic-mesh floor (except the 1<sup>st</sup> week) was also typical of this group although its preference decreased parallel with the increasing body weight (similarly to the group of 24 rabbits), the time of staying on plastic-slat and were-mesh floor increased.

In case of higher stocking density (32 rabbits/block of cages) the choice of the three preferred floor types became similar from 7 weeks of age. The explanation of this could be the same that was in the experiment of the group of 24 rabbits, but the stocking density was higher in this study. Therefore the similar choice of different floors started earlier. All of the 32 rabbits stayed mostly on 1.5 m<sup>2</sup>, which is equal to 21-22 rabbits/m<sup>2</sup>, that is higher than the ideal stocking density (16 rabbits/m<sup>2</sup>). We have to consider that in case of free choice rabbits like to huddle together in their young ages (Matics et al., 2002) therefore in this period more rabbits might be placed onto 1 m<sup>2</sup>. The ideal stocking density can be evaluated in body weight more precisely. It means that 45 kg rabbit can be reared on 1 m<sup>2</sup> of the cage (Lebas et al., 1986). This is the reason for that in case

of 32 rabbits per group the choice of different floors became similar earlier, and for that after 7 weeks of age some rabbits (8-9-10%) stayed on the soiled and wet planked floor.

Rabbits stayed on planked floor after weaning, this can also be observed from the feed consumption (Fig 4). At 4.5 and 5.5 weeks of age the feed consumption was similar in all of the 4 cages beside the small advantage of plastic-mesh floor. After 6 weeks of age the rabbits refused to stay on the wet and manured planked floor even if they were taking up feed. The feed consumption on the three other floor types was equally 30% of the total amount.

## CONCLUSIONS

Housing rabbits in groups after weaning at 21 days of age they assemble and huddle together in a preferred cage (of plastic-mesh floor or planked floor). After the first week in spite of daily cleaning, the planked floor became wet by urine, therefore rabbits refused it increasingly. The choice of the other three floor types became similar. Placing 32 rabbits into the block the choice of preferred floors became similar already after 6 weeks of age, while in case of 24 rabbits it became similar only after 9 weeks of age. Above a given stocking density (rabbit kg/m<sup>2</sup>) rabbits rather choose a less preferred floor than being in a higher number in a cage of a more preferred floor. This was proved by placing 32 rabbits into the block, when 8-11% of the rabbits stayed on the refused, soiled and wet planked floor for feeding at 7-10 weeks of age.

Preliminary results prove that the experiment of free choice is a suitable method for finding the most advantageous floor type for rabbits. According to these observations among the studied floor types,

the plastic-mesh floor is a good choice from the view point of both the rabbits and production.

The preference of different floor types according to spend time or feed consumption was different in all cases. From this it can be concluded that the preference of a floor could be expressed, and the higher stocking density is not problem for rabbits during the resting period. During feeding period rabbits choose the less preferred cages (even planked floor) more often.

With the separated analysis of active and resting periods of rabbits more information could be obtained for the ideal form of the cage-floor.

## REFERENCES

- Bessei, W., Tinz, J., Reiter, K. 2001. Die Präferenz von Mastkaninchen für Kunststoffgitter und Tiefstreu bei unterschiedlichen Temperaturen. 12. Arbeitstagung über Haltung und Krankheiten der Kaninchen, Pelztier und Heimtiere, Celle. 133-140.
- Drescher, B. 1992. Housing of rabbits with respect to animal welfare. *J. Appl. Rabbit Res.* 15. 678-683.
- Kustos K., Metzger Sz., Szendrő Zs., Eiben Cs., Nagy I. 2002. Carcass traits and meat quality of rabbits reared in cages or pens. (in Hung.) 14<sup>th</sup> Hungarian Conference on Rabbit Production, Kaposvár, 129-134.
- Lebas, F., Coudert, P., Rouvier, R., Rochambeau, H. 1986. The rabbit husbandry, health and production. FAO, Rome. 159.
- Matics Zs., Szendrő Zs., Radnai I., Biróné Németh E., Gyovai M. 2001. Free choice of rabbits kits among cages of different size (preliminary results). (in Hung.) 14<sup>th</sup> Hungarian Conference on Rabbit Production, Kaposvár, 43-48.
- Morisse, J. P., Boilletot, E., Martrenchar, A. 1999. Preference testing in intensively kept meat production rabbits for straw on wire grid floor. *Appl. Anim. Behav. Sci.*, 64. 71-80.

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