Comparison of the behaviour of growing rabbits reared on wire net or combined floor at different stocking densities

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ABSTRACT - The frequency of some behaviours of growing rabbits was studied in pens keeping the animals either on wire net or combined (half of the floor wire net, half of the floor straw litter) floor at different stocking densities. The combined floor could be favourable by increasing the frequency of the social behaviour and decreasing the frequency of the stereotypes, but it decreases the comfort behaviours and the resting time. The decrease of stocking density from 16 to 12 or 8 rabbits/m² significantly increased the stereotypes.

Key words: Growing rabbits, Behaviour, Floor type, Stocking density.

Introduction – In animal husbandry animal welfare and environment respect are gaining importance world-wide for an efficient and safe production. During the last some years also the consumers’ demands changed substantially and the meat originated from animals kept in (semi)natural conditions has been favoured. According to the animal welfare in rabbit breeding the application of deep litter and rearing in relatively large groups is currently advocated (Verga, 2000) even of available data show that rabbits do not like straw litter (Moirse et al., 1999; Orova et al., 2004). There are no official EU directives for rabbit housing yet, only recommendations are available in some countries (Luzi et al., 2006; Hoy, 2008). Therefore, the aim of this study was to compare the behaviour of growing rabbits reared in pens on wire net or combined floor at different stocking densities for providing new information for the development of EU regulations.

Material and methods – The experiment was carried out at the Faculty of Animal Science of the Kaposvár University, using Pannon White growing rabbits of both sexes. Animals were kept in a closed building with a temperature of 16-17°C using a lighting regime of 16L/8D. One hundred twenty-four rabbits were placed to 12 pens, each having a basic area of 50×170cm. Six pens had a wire net floor, six pens a combined floor (half of the floor wire net and half of the floor straw litter). On both floor types (wire net and combined) three stocking densities (8, 12 and 16 rabbits/m²; 7, 10 and 13 rabbits/pen) were applied.
Thirty-six rabbits were placed into conventional cages (2 rabbits/cage) as control. The experiment took place between 5 and 11 weeks of age. Rabbits consumed medicated pellet until the age of 9 weeks (14.5% crude protein, 17.5% crude fibre, 2.0% ether extract, 10.3 MJ DE/kg, 50 000mg/kg Tilmikozin and 0.025% Pulmotil 200) and a non-medicated pellet (16.0% crude protein, 16.0% crude fibre, 3.0% ether extract, and 10.6MJ DE/kg) thereafter *ad libitum*. Drinking water was available continuously from self-drinkers. During the experimental period 24-hour video recordings were made weekly, every week at the same time. One minute of recording was performed each 10 minutes per 24 consecutive hours. The activities of all of the rabbits were recorded and their frequencies were calculated. The following activities were analyzed: eating, drinking, locomotion, resting, comfort, social and agonistic behaviours, and stereotypes. The effect of floor type and stocking density on the various behavioural forms was evaluated by the SPSS 10.0 software package (SPSS for Windows, 1999), by means of the analysis of variance using the following general linear model: $BF(\%)_{ijk}=\mu+F_i+SD_j+e_{ijk}$, where $BF$=behavioural form, $\mu$=overall mean, $F_i$=floor type (i=1-2), $SD_j$=stocking density (j=1-3), $e_{ijk}$=residual.

Results and conclusions – The type of floor had a significant effect on the most of the examined behaviours, except drinking and locomotion (Table 1). The frequency of eating (consumption of the pellet) was significantly lower on the combined floor than on the wire net floor, which could be explained by the straw consumption of the rabbits observed on this type of floor. The frequency of resting was significantly higher on the wire net floor than on the combined floor, which has been previously associated to a lower animal comfort of rabbits kept on straw (Morisse et al., 1999; Orova et al., 2004). The favourable effect of the combined floor was observed mostly in the social and stereotypes. The frequency of the social behaviour was more than two times higher, while the frequency of the stereotypes was almost nine times lower on the combined floor than on the wire net floor.

The stocking density had also a significant effect on the most of the examined behavioural forms, except the resting and social behaviours (Table 2). It was observed that the frequency of eating decreased, while the frequency of locomotion and comfort behaviours

| Behavioural forms          | Wire net | Combined | $P$   |
|---------------------------|---------|----------|-------|
| Eating                    | 12.00   | 9.22     | <0.001|
| Drinking                  | 1.67    | 1.41     | 0.114 |
| Locomotory behaviours     | 6.99    | 6.96     | 0.952 |
| Resting                   | 58.79   | 53.98    | 0.027 |
| Comfort behaviours        | 13.14   | 9.34     | <0.001|
| Social behaviours         | 3.32    | 7.08     | <0.001|
| Stereotype behaviour      | 3.95    | 0.44     | <0.001|
increased with increasing the stocking density. It was established that the frequency of the stereotype behaviour was lowest at the highest stocking density. The frequency of this behavioural form was more than 9 times lower at 16 rabbits/m², than at 8 or 12 rabbits/m² stocking density. In conclusion, the combined floor could be favourable by increasing the frequency of the social behaviour and decreasing the frequency of the stereotype behaviour, but decreases comfort behaviours and resting time. Moreover on the combined floor rabbits decrease pellet consumption, which could reduce daily weight gain, and consequently increase the fattening period. The decrease of stocking density from 16 to 12 or 8 rabbits/m² impaired behaviour of rabbits which showed higher frequency of stereotypes.

Table 2. Effect of stocking density on the frequency of some behavioural forms of Pannon White growing rabbits.

| Behavioural forms      | Stocking density (rabbits/m²) | P     |
|------------------------|-------------------------------|-------|
|                        | 8                             | 12    | 16    |       |
| Eating                 | 11.74                         | 11.44 | 8.65  | 0.001 |
| Drinking               | 1.74                          | 1.18  | 1.71  | 0.013 |
| Locomotory behaviours  | 6.04                          | 6.68  | 8.22  | 0.009 |
| Resting                | 56.48                         | 55.28 | 57.40 | 0.698 |
| Comfort behaviours     | 9.69                          | 11.67 | 12.36 | 0.070 |
| Social behaviours      | 5.04                          | 5.23  | 5.33  | 0.922 |
| Stereotype behaviour   | 3.10                          | 3.14  | 0.33  | 0.002 |

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