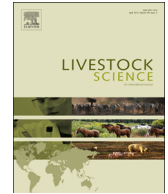




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Effect of floor type on behavior and productive performance of growing rabbits

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ABSTRACT

In this study the results of two experiments are presented. The aims of the study were to examine the location preference of growing rabbits depending on the floor types (plastic-mesh, wire-mesh and deep-litter) and temperature (low, medium and high; Trial 1), and to evaluate the productive performance of growing rabbits at medium room temperature (Trial 2). In Trial 1 at the age of 5 weeks, the rabbits were randomly placed in one of the three pens each with a basic area of 3.8 m² (43 rabbits/pen, 11.3 rabbits/m²). The floor of each pen was 1/3 wire-mesh, 1/3 plastic-mesh and 1/3 deep-litter. The treatment was repeated in winter, spring and summer with the following room temperatures: 10–11 °C (low, $n = 129$), 17–20 °C (medium, $n = 129$) and 22–26 °C (high, $n = 129$), respectively. With infrared cameras, 24h video recordings were made once a week, between 5 and 11 weeks of age. The number of rabbits in each location in the pens was recorded at every 30 min. The rabbits showed the lowest preference for deep-litter ($P < 0.001$) at each age, regardless of the temperature. The preference for wire-mesh or plastic-mesh floor depended on the temperature. At lower temperature most rabbits preferred staying on plastic-mesh, however at medium and higher temperature more rabbits chose the wire-mesh floor during the final period of fattening. In Trial 2 the productive performance was examined. At the age of 35 days, the rabbits ($n = 126$) were randomly sorted to three groups and were housed in pens with a basic area of 1.27 m² (14 rabbits/pen, 11 rabbits/m²). The floor type of the pens was plastic-mesh, wire-mesh or deep-litter. The body weights of rabbits between the ages of 7 and 10 weeks were significantly higher in the group on wire-mesh and plastic-mesh compared to the rabbits on deep-litter. Twelve week-old rabbits showed no significant differences among the groups. No significant differences were found for feed intake, feed conversion ratio or mortality between the ages of 5 and 12 weeks, however significant differences were recorded between the plastic-mesh and deep-litter groups for the average daily weight gain. It could be concluded that rabbits do not prefer staying on deep-litter, their preferences between wire-net and plastic-mesh floor depends on the temperature and age. Housing the growing rabbits on wire- or plastic-mesh floors had no substantial differences, while housing rabbits on deep-litter negatively affected certain traits, but the alterations were smaller compared to the results of the relevant literature.

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1. Introduction

The welfare of rabbits is a factor of increasing importance in the development of housing technologies and from the aspect of animal welfare, the floor is one of the most important technological elements since animals spend most of their time on it (locomotor and resting behavior). Some organic production systems (BioAustria, BioSuisse, Naturland) suggest rearing rabbits on deep-litter (at least 50% of the floor) to offer animals a more comfortable floor (Szendrő and Dalle Zotte, 2011). However, opposite findings were reported by Morisse et al. (1999) and Orova et al. (2004). Bessei et al. (2001) concluded that, at a temperature above 15 °C, the rabbits preferred perforated plastic-mesh, but at a lower temperature deep-litter was chosen. According to Princz et al. (2008), the rabbits preferred the plastic-mesh compared to wire-mesh floor, in both the active and in resting periods. Similar results were published by Matics et al. (2003). According to Morisse et al. (1999), the final body weight of rabbits housed on deep-litter was 8% lower than rabbits housed on wire-mesh. Rabbits may also consume the spoiled litter material which may cause increased mortality (Lambertini et al., 2001; Dal Bosco et al., 2002). Princz et al. (2009) and Dalle Zotte et al. (2009) found no differences in the production and slaughter performance of rabbits housed on plastic- or wire-mesh floors.

No studies have been reported in which floor type and temperature were evaluated simultaneously. For this reason, in this experiment, location preferences of growing rabbits were examined depending on the floor types (plastic-mesh, wire-mesh and deep-litter) and temperature (low, medium, high; Trial 1). In addition, the productive performances of growing rabbits housed on plastic-mesh, wire mesh or deep litter floor were evaluated at medium room temperature (Trial 2).

2. Material and methods

2.1. Animals and experimental design

Two trials were conducted at the experimental rabbit farm of Kaposvár University using growing rabbits of the maternal line of the Pannon Rabbit Breeding Programme. Daily lighting period was 16 h (6:00–22:00). The rabbits

were fed commercial pellets *ad libitum* from 5 to 9 weeks of age that contained 10.3 MJ/kg DE, 16.1% CP, 2.8% EE, 16.9% CF and a coccidiostat. From 9 to 11 weeks, the pellets contained 11.0 MJ/kg DE, 16.1% CP, 4.4% EE and 16.0% CF with no medications. Water was available *ad libitum* from nipple drinkers.

2.2. Preference test (Trial 1)

A test was conducted to evaluate the floor type preference of growing rabbits in relation to the room temperature. At weaning (at the age of 5 weeks) the rabbits were randomly placed in one of the three pens, each with a basic area of 3.8 m² (1.9 m × 2.0 m) (43 rabbits/pen, 11.3 rabbits/m²). The treatment was conducted in winter, spring and summer with the following room temperatures: 10–11 °C (low, *n* = 129), 17–20 °C (medium, *n* = 129) and 22–26 °C (high, *n* = 129), respectively. Cooling and heating systems were also used as needed to maintain temperature. The floor of the pens was 1/3 wire-mesh with 2.05 mm wire diameter, 10 mm × 50 mm holes, 1/3 plastic-mesh with 10 mm slats and 10 mm × 75 mm holes, and 1/3 wheat straw deep-litter. 7–8 cm thick straw bedding was placed on the wire-mesh floor. Fresh straw was added daily and the deep litter was replaced weekly. The floor types were randomly sorted in every pen. The layout of the floor types were the following: plastic-deep-wire (Pen 1), wire-plastic-deep (Pen 2) and deep-wire-plastic (Pen 3; Fig. 1). Every part of the pens was equipped with a feeder (40 cm) and two nipple drinkers.

Infrared cameras were fixed above the pens. A 24 h video recording was made once a week, between 5 and 11 weeks of age. On the days of recording nobody entered the room. The number of rabbits in each location of the pens was recorded every 30 min. The 24 h observations were divided into four 6-h periods, starting at 5:00 h. From the number of rabbits located at the three parts, percentages were calculated and were averaged for the part of the day.

2.3. Productive performance (Trial 2)

In Trial 2 the productive performances of growing rabbits on different floor types was examined. At the age of five weeks, the rabbits (*n* = 126) were randomly sorted to three groups and housed in pens with a basic area of

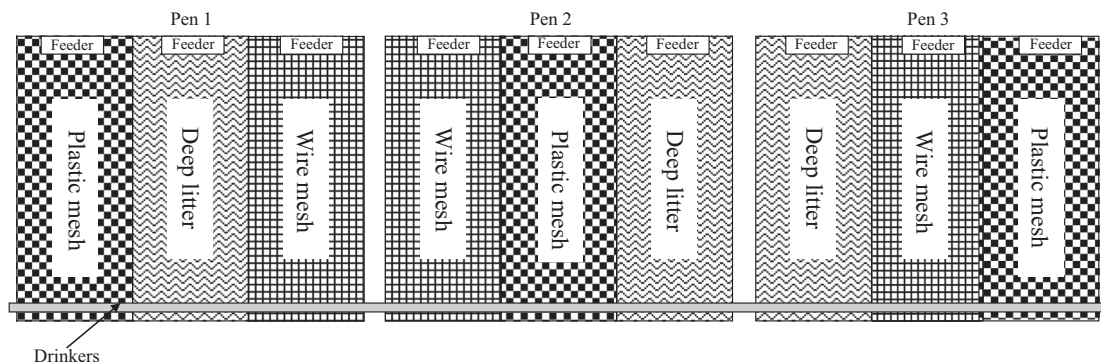


Fig. 1. Experimental design.

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