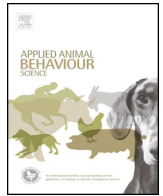




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# The use of perches and platforms by broiler chickens

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### ABSTRACT

Perching is considered an integral part of chicken behaviour, and is suggested to alleviate leg problems and enhance mobility in broilers, as it stimulates diversification of locomotion. The use of perches is, however, low in broilers. There is a need for investigation of elevated structures that are better accepted by meat type chickens.

We compared elevated plastic platforms with wooden perches on a commercial farm. The data comprises 4 flocks with perches and 6 flocks with platforms, as well as control flocks for both. The use of these structures and the activity of broilers were recorded from video. Activity was measured as bouts of movements in an area with no platforms. The behaviour of the birds was analysed at 3 ages, during both day and night.

The use of platforms exceeded the use of perches. Broilers used low perches (10 cm) more than high perches (30 cm) at the age of 32 days ( $P=0.001$ ). Platforms were used more during day time than during nights especially in younger broilers ( $P=0.046$ ). Broilers became more inactive as they got older and were less active during the nights. The presence of platforms had no effect on general activity. Because the perches were mostly unused their effect on bird activity was not analysed.

The frequent use of platforms indicates they are better suited for broilers than perches. However, platforms did not appear to stimulate general activity. The fact that the broilers used platforms to a high degree indicate that broilers are motivated to use elevated structures or driven by high animal densities. It might be that the low perch use is due to physical challenges and not to a lack of motivation to use elevated structures.

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### 1. Introduction

Broilers are normally kept in very stable environments which provide minimal stimulation. This lack of environmental enrichment was identified as a concern for animal welfare in broiler production in the Report on the welfare of broilers by the European Commission (2000). Perches, defined as elevated structures which birds can grasp with their feet and use to survey their environment from (EFSA, 2015), have been shown to be very important recourses for chicken (Olsson and Keeling, 2000). Their use is motivated by multiple needs: night-time roosting is part of the natural anti-predator behaviour in chicken (Newberry et al., 2001).

In layer chicks the day time use of perches begins at about 2 weeks of age, while perching at night starts to develop at an age of 3 weeks (Heikkilä et al., 2006). In broilers, the use of perches has been shown to be highest at the age of 4–5 weeks and declines thereafter (Bizeray et al., 2002; Ventura et al., 2012; Bailie and O'Connell 2015). However, most experimental studies on perch use by broil-

ers indicate that these are used only to a modest degree (Pettit-Riley and Estevez 2001; Su et al., 2000; Rodriguez-Aurrekoetxea et al., 2015), while published reports on other types of elevated structures, such as platforms, are very few (Oester and Wiedmer, 2005).

Providing greater environmental complexity with a possibility to perch is suggested to encourage increased physical activity of birds, which potentially leads to better leg health and animal welfare (Bizeray et al., 2002; Ventura et al., 2012; Bailie et al., 2013; Ohara et al., 2015; Bailie and O'Connell 2015). The use of perches by layer pullets has been shown to promote their skeletal development (Yan et al., 2014) and might also develop their spatial skills (Gunnarsson et al., 2000). Furthermore, a change in exercise patterns brought upon by barrier perches affected the development of musculature in broilers (Sandusky and Heath, 1988). A further potential benefit of promoting perching and roosting behavior in broilers in commercial farming environments is that these may decrease the contact between foot pads and the litter, as well as increase the use of available space (Bizeray et al. 2002; Ventura et al. 2012).

As perch use has been reported to be very low in broilers, the benefits of perches for these animals might be only minor. However, other types of structures, which are easier for broilers to access and

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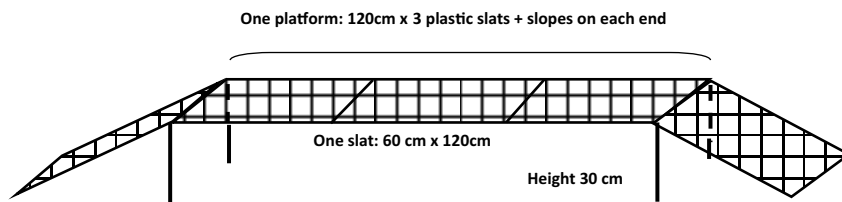


Fig. 1. Illustration of the platform structure. The ramps extend all the way to floor with 15° angle.

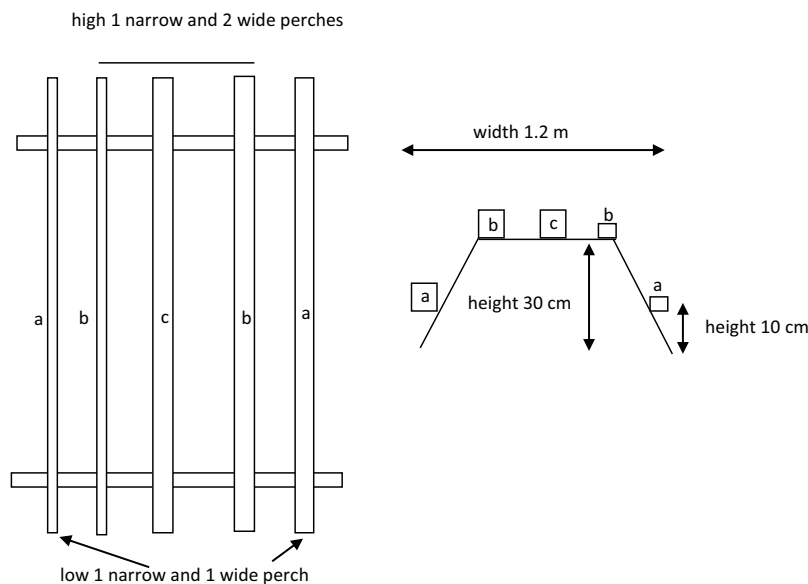


Fig. 2. Illustration of the perch structure showing a: low perches, b: high perches and c: high in the middle perch. Broilers used the low perches more than the other types at 32 days of age ( $P=0.018$ ). The median number of birds observed per one perch at the age of 32 days are a: low 0.2, b: high 0.0 and c: high in the middle 0.0 (range 0.3, 0.0, 0.0 respectively) birds/perch. Perch use was observed in 4 flocks.

more comfortable to use, might be more appropriate. There is a clear demand for further research on optimal design for enrichment stimuli for modern broilers (Baillie and O’Connell, 2015).

We aimed to compare the use of platforms and perches by broiler chickens in commercial flocks. In addition, we wanted to establish if the activity of broilers could be increased by these elevated structures.

## 2. Materials and methods

The study was approved by the University of Helsinki Viikki Campus Research Ethics Committee and submit to the European Directive 2010/63 on the protection of animals used for scientific purposes. The birds were managed according to normal farm practices, under commercial conditions and no additional harm was expected by the perches or platforms, or of the filming.

### 2.1. Birds and housing

Ross 508 birds obtained from a commercial hatchery and raised on one broiler farm in Western Finland were studied. Birds were fed ad libitum with pan feeders, beginning with commercial starter feed, then transitioning to a grower diet combined with whole wheat. Water was offered in nipple drinkers with drip cups. The house had no windows and was continuously lit at the beginning. After day 6 the birds had 2 dark periods at 0:00–4:00 and 12:00–14:00. Birds were housed in rooms of 797 m<sup>2</sup> on deep peat litter. In the beginning of the rearing period there were on average 12945 (SD 558) birds in the flocks and the peak animal density was

40 (SD 2.4) kg/m<sup>2</sup> which was reached prior to slaughter. There was no thinning of the flock and all the birds were slaughtered at the age of 37 or 38 days.

### 2.2. Platforms and perches

The building had four similar rooms. In each replicate, there was one room with perches, one room with platforms, and 2 control rooms without perches or platforms. Six replicates included a platform room and its control. The platform treatment and the control treatment without platforms alternated between these two rooms. The four first replicates also included a perch room and its control. The perch treatment and the control treatment without perches alternated between these two rooms. Treatment and control flocks were observed simultaneously. Platforms (20) were evenly dispersed between drinker and feeder lines in platform rooms. Perch structures (21) were evenly dispersed between drinker and feeder lines in perch rooms. It was calculated that the platforms and perches could occupy approximately 10% of the birds in a flock simultaneously.

The plastic mesh (with holes of 20 × 25 mm) platforms were built of a total of 5 parts, each part being 120 cm long and 60 cm wide. They were elevated using metal feet to 30 cm from the floor. In both ends an elevated platform formed a ramp continuing all the way to the floor (Fig. 1).

The perch structures with 5 perches each were altogether 200 cm long and 120 cm wide. The perches were at the heights: 30 cm and at 10 cm from the floor (Fig. 2). The perches were of 2 thicknesses: 22 × 22 mm and 50 × 50 mm. All the perches were

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