

Using motivation to feed as a way to assess the importance of space for broiler chickens

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Received 16 March 2010;

revised 7 May 2010;

accepted 22 September 2010.

MS. number: 10-00179.

Available online 22 October 2010.

This paper describes a novel combination of feeding motivation and spatial preference testing. We used the feeding motivation test to determine a ‘low’ barrier height that broiler chickens, *Gallus gallus domesticus*, that were not food deprived would cross to get to food, and a ‘high’ barrier height that food-deprived chickens would cross to get to food. These barriers were then used to assess the chickens’ spatial preferences. Birds could show their spatial preference by moving between two compartments with different stocking densities (14.7 birds/m² in a compartment of fixed size versus 9.3, 12.1 or 14.7 birds/m² in a compartment of adjustable size). The compartments were separated by either the low or the high barrier. In the density preference test, the number of birds in the adjustable compartment increased with increasing size of this compartment, indicating that birds preferred lower densities, an effect that became more pronounced with age. This effect occurred even when a barrier was used that had previously deterred 20–25% of birds from crossing to get to food after 6 h of food deprivation, suggesting that achieving a lower density was important to the broiler chickens. Since this methodology does not involve training, it could be used to evaluate the importance of spatial or other preferences in a wide range of domestic and nondomestic species.

Keywords: animal welfare; broiler chicken; crowding; *Gallus gallus domesticus*; methodology; motivation; preference; space allowance; stocking density

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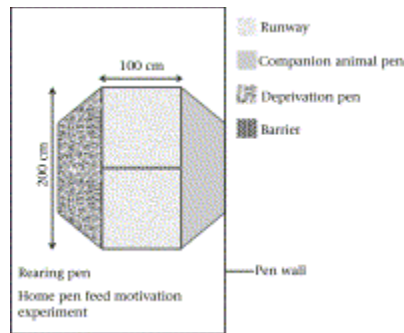


Figure 1. Rearing pen, also used as home and test pen for the broiler chickens in the feeding motivation experiment. The runway used to evaluate feeding motivation was permanently present in the home pen, from the start of week 3 on. Birds were not able to enter the runway outside their trials. The companion animal pen and the deprivation pen were removed when no trials were run.

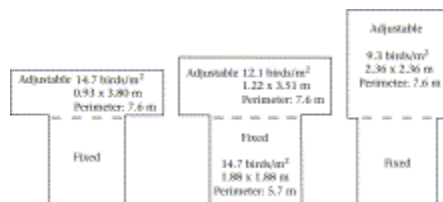


Figure 2. Illustration of the sizes and shapes of the pens used for the density preference experiment. There were three different settings to the adjustable compartment of the pen, which could be applied to any of the four pens by folding the walls, so achieving different areas at an equal perimeter length. The area and shape of the fixed compartment were always the same. During testing, the two compartments were divided by a barrier (- - -). Two barrier settings were used ('low barrier' and 'high barrier') which were alternated between trials. Outside the hours that trials were run, the adjustable compartment was set to 12.1 birds/m² and the barrier was removed, thus creating an overall density of 13.4 birds/m².

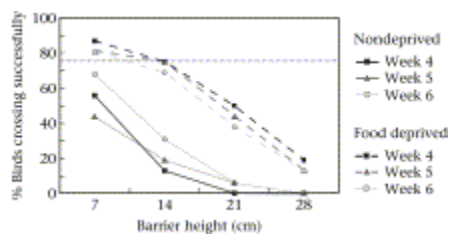


Figure 3. Percentages of birds crossing the barrier in the feeding motivation test, at different

