Floor quality and space allowance in intensive beef production: a review

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Abstract

In intensive beef production in Europe, finishing beef cattle are typically reared in pens with fully slatted floors and low space allowances. These housing conditions were questioned in a report published by the Scientific Committee on Animal Health and Animal Welfare in 2001. The report concluded that the welfare of finishing bulls and steers is at risk if they are housed on fully slatted concrete or wooden floors or not provided with adequate floor space. The aim of the present paper is to review and update scientific evidence on the effects of floor quality and space allowance on the welfare of finishing beef cattle. It is shown that the recommendations made by the Scientific Committee on Animal Health and Animal Welfare are still valid, and are well supported by studies published over the last 10 years. Furthermore, results of several recent studies testing fully slatted floors with rubber covering indicate that this type of flooring is an acceptable alternative to concrete slats, with positive effects on animal behaviour and leg lesions. Consequently, a phasing-out of housing systems with fully slatted concrete floors is suggested. With respect to floor space, the studies reviewed here support the notion that it is essential to enforce minimum standards resulting in increased space allowances for intensive beef production systems.

Keywords: animal welfare, behaviour, finishing beef cattle, floor quality, legislation, space allowance

Introduction

Intensive beef production in Europe is characterised by the housing of finishing cattle in pens with fully slatted concrete floors and high stocking densities. In the main beef-production systems, calves are introduced to the finishing pens from dairy and suckler herds at an initial age of 3 months and 7–8 months, respectively; slaughter age varies between 12 and 16 months (Scientific Committee on Animal Health and Animal Welfare 2001). Throughout the fattening period, bulls and steers are fed energy-rich diets based on maize or grass silage plus concentrates. Group size is usually between 5 and 12 animals, resulting in fairly small pens offering little opportunity for locomotion. Given these housing conditions, the welfare of finishing beef cattle is likely to be adversely affected.

In 2001 and at the request of the European Commission, the Scientific Committee on Animal Health and Animal Welfare (2001) published a report on the welfare of cattle kept for beef production. With regard to floor quality, the report recommended that:

“fully slatted concrete or wooden floors should not be used. Particular attention to the type of slats should be given to avoid slipperiness. The gaps between the slats should not be so wide as to cause foot injuries, for example when claws become trapped. Slatted pens should only be used for animals of the size for which they were designed. A solid lying area with bedding is recommended although the use of rubberised slats may also provide for the animals’ needs”.

In a further recommendation, the Scientific Committee addressed space allowances and stated that:

“animals should be provided with adequate floor space in order to limit health problems and to ensure that the animals are not disturbed when lying. Increasing available floor space has been shown to improve animal welfare. For 500 kg animals these improvements are significant in the higher density ranges (1.5–3 m² per animal) but have been little studied above 4 m². The minimum space allowance should be 3 m² for an animal expected to reach 500 kg plus or minus 0.5 m² for each 100 kg difference expected between 400 kg and 800 kg”.

To-date, however, these recommendations have not been taken into account in European legislation. Unlike for calves, there is no Council Directive laying down minimum standards for the protection of finishing beef cattle, and pens with fully slatted concrete floors and space allowances lower than those recommended by the Scientific Committee are still permitted in the few EU member states with national legislation addressing this category of cattle. In Sweden, for example, beef cattle up to 600 kg can be kept on fully slatted floors with a space allowance of 2.3 m² per animal, and in Austria the minimum space allowance for finishing cattle up to 650 kg is 2.7 m² per animal.

Below, there is a review of the scientific literature on the welfare and housing of finishing bulls and steers that has