



Acknowledgements

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Contact details:

Rachel M. Boyle

racbo594@student.liu.se

https://cms.ifm.liu.se/biology/master_projects/2005/racbo594/

Yearling dairy heifers on two nutritional levels, out-wintered on an all-weather pad or housed indoors in cubicles

Rachel M. Boyle University of Linköping Sweden



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There are doubts as to whether relatively slow growing dairy heifers can be kept outdoors without negative implications for their welfare and productivity.

In spite of their obvious importance in determining future production levels replacement heifers are often assigned the poorest housing conditions on Irish farms. They are generally housed indoors, often in pens on slatted concrete floors, which has negative welfare implications and high economic costs. Therefore, the objective of this experiment was to evaluate the behaviour, welfare, performance and climatic energy demand of yearling dairy heifers on two levels of nutrition kept either on an all-weather pad or indoors in cubicles.

The trial was carried out at Moorepark Research Centre, Fermoy, Co.Cork, Rep. of Ireland. 96 yearling dairy heifers were blocked in groups of 8 with 3 replicates, from November 2004 to February 2005.

Treatments

Indoors-conventional cubicle housing

- Silage only
- Silage plus concentrate

Outdoors-wood chip pad

- Silage only
- Silage plus concentrate

Measurements taken

Welfare

- Skin lesions
- Dirtiness scores

Performance

- Weights
- Body condition score
- Feed intakes

Behaviour

- Instantaneous scan sampling
- Continuous recording (all-occurrence sampling)

Climatic energy demand

- Climatic recordings
- Hair length
- Rectal temperatures

Results

- Higher frequency of comfort, social & play behaviours were recorded outdoors
- Trips, slips and falls were only recorded indoors
- Yearlings outdoors had significantly lower limb lesion scores compared to yearlings indoors
- Yearlings outdoors had lower weight gains, body condition scores and feed intakes
- Heat loss did not exceed heat production for any of the animals



Indoor housing restricted the yearlings' locomotory, comfort and social activities while animals outdoors showed more normal and diverse behaviour patterns. The fact that adventitious bursa (fluid filled sac on the joints) were only recorded in the animals indoors is probably a reflection of the higher frequency of trips, slips and falls recorded in this treatment. These lesions pose serious health and welfare concerns and reflect major inadequacies with the concrete flooring. Although bare, hairless patches are not a serious health issue they indicate traumatic contact with housing fixtures and fittings. This suggests inadequacies in housing design. Yearlings outdoors had lower feed intakes compared to animals indoors, this was reflected in their lower average daily gains and body condition scores. However, yearlings outdoors appeared to use their food more efficiently. Although, further research is required to understand the reasons for this. Furthermore, their average daily gains were well within the recommendations by the Teagasc (Ireland) advisory service. This may be due to the fact that yearlings outdoors did not experience cold stress on any of the days that weather recordings were made. Although, it is likely that these differences were driven more by the higher space allowances and better underfoot conditions associated with the out-wintering pad than to the outdoor environment *per se*.

