

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



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Introduction

- Indoor housing on concrete floors associated with negative welfare implications and high cost
- Can slow growing yearling dairy heifers be kept outside during the winter without compromising their welfare/performance?

Objective

Evaluate the behaviour, welfare, performance and climatic energy demand of yearling dairy heifers on two levels of nutrition kept on an out-wintering pad or indoors in cubicles

Materials and Methods

- 96 yearling dairy heifers-blocked in groups of 8 with 3 replicates

Treatments

- Indoors silage only (indoors low)
- Indoors silage plus concentrate (indoors high)
- Outdoors silage only (outdoors low)
- Outdoors silage plus concentrate (outdoors high)



Indoors-conventional cubicle housing



Outdoors-wood chip pad housing

Measurements

Welfare	Behaviour
• Skin lesions	• Instantaneous scan sampling
• Animals dirt scored	• Continuous recordings, all-occurrence behaviour sampling
• Pad dirt scored	
Performance	Climatic energy demand
• Weighed	• Climatic recordings
• Body condition scored	• Hair length
• Feed intakes	• Rectal temperatures

Results

Welfare

- 15 % (7/48) of yearlings indoors were affected by bare hairless areas compared to 0% (0/48) outdoors ($P < 0.05$)
- 23 % (11/48) of yearlings indoors were affected by adventitious bursa compared to 0% (0/48) outdoors ($P < 0.001$)

Conclusions

- Out-wintering pad associated with improved health and behaviour
- Out-wintering did not seriously compromise animal performance

Behaviour

- There was no effect of nutrition or housing treatment on time spent standing or lying or on activity budgets ($P > 0.05$)
- A higher frequency of comfort, non-agonistic social and play behaviours were recorded outdoors (Figure 1)

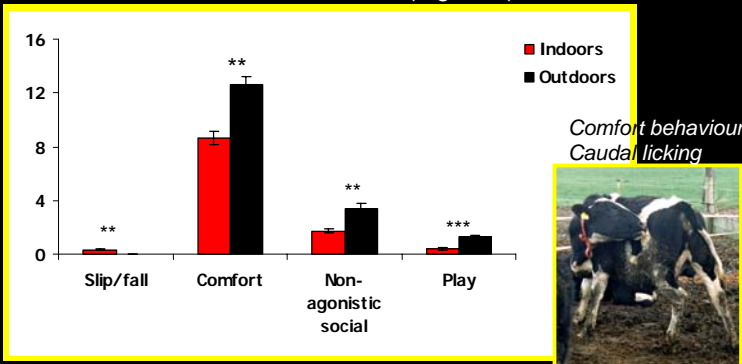


Figure 1. Frequency of occurrence of different behaviours

Performance

- Yearlings outdoors had lower weight gains, body condition scores ($P < 0.05$) and feed intakes

	Indoor low	Indoor high	Outdoor low	Outdoor high	Housing P	Nutrition P
Body condition score change	0.10	0.41	-0.01	0.20	0.01	0.001
Weight gain (g/day)	0.72	0.98	0.62	0.92	0.05	0.001
Intake (kgDM/day)	5.37	6.14	4.90	5.15	0.01	0.01

Table 1. Effect of treatment on performance parameters

Climatic energy demand

- At no point were yearlings cold stressed

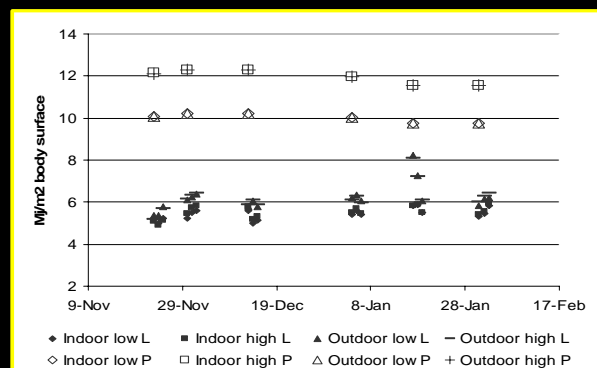


Figure 2. Heat production (P) heat loss (L)