

Out-wintering pads (OWP): effects on beef cattle production

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Introduction

Two years research has demonstrated that cattle accommodated on an OWP had higher feed intake and growth rate than those accommodated in a slatted floor shed (French and Hickey 2003). The objectives of this experiment were to evaluate the effect on performance of offering cattle access to an OWP in conjunction with a slatted floor shed and to determine if the production advantage achieved by accommodating animals on an OWP relative to a slatted floor shed can be achieved by covering a slatted floor with rubber mats or straw.

Materials and methods

Seventy five charolais crossbred steers were assigned at random to one of five treatments which were (1) animals housed on slats at 2.5 m²/head, (2) animals confined on OWP at 18 m²/head, (3) animals housed on slats at 2.5 m²/head with free access to an OWP at 15 m²/head, (4) animals housed on matted slats at 2.5 m²/head, (5) animals housed on straw at 4m²/head. For the animals accommodated on slats the space allowance was increased to 3.33m²/head after 89 days of the experiment. Animals on each treatment were divided into 3 pens of 5 steers and intake was recorded on a pen basis. Cattle were offered a total mixed ration (TMR) (500g of concentrates dry matter (DM) and 500g grass silage DM /kg total DM) *ad libitum*. All animals were slaughtered at the end of the 151 day experiment. The data were analysed by ANOVA using a model appropriate for a single factor randomised complete block design.

Results and Discussion

There was no effect of indoor floor type on liveweight gain, carcass gain, fat score, feed intake or feed efficiency (Table 1). Relative to animals housed indoors on slats, animals accommodated outdoors on OWP or given free access to an OWP had higher daily liveweight gain ($p < 0.001$), carcass gain ($p < 0.05$), and feed intake ($p < 0.01$). There was no significant effect of accommodation system on carcass fat score or feed efficiency. The relative difference in performance between the cattle on the OWP and the slatted floor shed was greater in this experiment than previous in years. In

the current experiment animals were offered a TMR in comparison to a fixed allowance of concentrates and silage *ad libitum* in previous experiments comparing these two accommodation systems. The results from the three years experiments on OWP are averaged in Table 2. The initial two experiments have been reported previously (French and Hickey, 2003). Animals accommodated on the OWP had 0.06 and 0.23 higher feed intake and liveweight gain respectively. Assuming there was no effect of environment on maintenance requirement, the animals on the OWP had 7 MJ of extra energy available for growth. The net energy required for the growth rate achieved was 4.9 MJ/day higher on the OWP. If energy retention efficiency had been similar in animals accommodated indoors and on the OWP, growth rate would have been 0.085 higher for the former. This calculation implies that 0.35 of the difference in growth rate between the animals accommodated indoors and the animals accommodated on the OWP was due to a difference in feed efficiency with the remainder due to feed intake. All the energy calculations were made using AFRC (1993)

Table 2 Summary of the effect on live weight gain and energy efficiency from three year experiments on OWP and slatted floor sheds

	OWP	Slats
Liveweight gain (lwg) (kg/day)	1.20	0.97
Energy intake (MJME/day)	120	113
ME available for growth (MJ/day)	62	55
Net energy required for lwg achieved	24.1	19.2
Net energy efficiency	0.38	0.35
Lwg (kg/day) if similar efficiency	1.20	1.05

Conclusion

As in previous experiments, accommodating cattle on an OWP improved their growth and feed efficiency. The use of straw bedding or rubber matted slats give no production benefit. Approximately 0.35 of the growth advantage from OWP was due to improved feed efficiency with the remainder due to increased intake.

References

AFRC (1993) CAB international, Wallingford, UK.
French, P. and Hickey, M.C. (2003) *Proceedings of the Agricultural Research Forum*, 3rd-4th March 2003, p41

Table 1. The effect of accommodation system on feed intake and efficiency, liveweight and carcass gain and fat score

Accommodation system	Feed intake (kgDM)	Liveweight gain (g/day)	Carcass gain (g/day)	Fat score	Feed efficiency (MJ intake/kg carcass)
OWP	10.9 ^a	1400 ^a	766 ^a	3.8	170
OWP & slats	10.6 ^a	1330 ^a	759 ^a	3.6	167
Slats	9.5 ^b	1010 ^b	631 ^b	3.5	181
Matted slats	9.6 ^b	1020 ^b	643 ^b	3.6	178
Straw	9.8 ^b	1100 ^b	636 ^b	3.7	185
s.e.	0.17	59.5	33.2	0.10	5.4
Significance	**	***	**		