

## Compensatory growth in suckler beef cattle production systems on two commercial farms in Scotland

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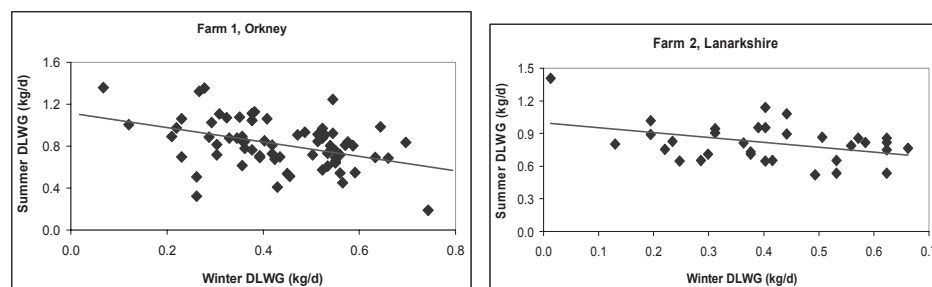
**Introduction** Compensatory growth can be described simply as the ability of animals to “compensate” for a period of growth restriction (usually during winter) with a subsequent period of enhanced growth (usually during the subsequent summer) such that overall growth over the entire period is substantially the same. When practiced successfully, this feeding strategy can reduce the costs of beef production by minimising winter feeding costs within appropriate feeding systems. The objective of this on-farm study was to examine compensatory growth in weaned steer and heifer suckled calves on two commercial farms in Scotland.

**Materials and methods** Two studies were carried out on 2 commercial farms in Scotland to study compensatory growth within spring calving suckler beef production systems. On one commercial suckler beef farm in Orkney, 69 weaned suckled calves of various breed types were used whilst on a similar suckler beef farm in Lanarkshire, 34 weaned suckled calves (all Limousin crossbreds) were used. On both farms, homebred weaned steer and heifer suckled calves were split into two balanced groups on the basis of breed type, sex and liveweight (LW) at weaning and offered one of two 1<sup>st</sup> winter diets designed to grow calves at either a high (HIGH) or low (LOW) rate of winter gain according to a 2 x 2 (calf sex x winter diet) factorial, continuous design experiment. Winter diets were based primarily on grass silage (although some wholecrop wheat was fed on farm 2) and a barley based concentrate was used at either a high or low level to achieve the divergent winter growth rates (Table 1). All steer and heifer calves on each farm were then subsequently grazed throughout the following summer on the same grazing and animal growth rates determined throughout by difference between initial (turnout) and final (housing) LWs. On the Orkney farm, good quality grazing was available throughout the summer whilst on the farm in Lanarkshire poorer quality rough grazing was available during the 1<sup>st</sup> half of the summer and silage aftermaths were available during late summer. Cattle LWs and daily liveweight gains (DLWG) were statistically analysed for each farm separately using the REML procedure in Genstat 8. The relationship between winter and following summer DLWG was determined using linear regression analysis.

**Results** Both steers and heifers responded similarly ( $P>0.05$ ) to the divergent winter diets so only average animal performance figures for each diet on each farm are given in Table 1. Whilst full compensatory growth was achieved during the summer months on Farm 1 such that LW at the end of the summer was almost identical, only partial compensatory growth was achieved on Farm 2, probably due to the quality of early summer grazing available. Financial calculations also showed that this compensatory growth resulted in £12 - £44 per head extra margin depending on the extent to which compensatory growth was realised in any given situation. The summer vs winter rates of daily liveweight gain (DLWG) on both farms are plotted in Figure 1 confirming the significant ( $P<0.05$ ) relationships between low winter and high summer growth rates.

**Table 1** Winter diets offered during the 1<sup>st</sup> winter period, along with LWs and DLWGs of animals throughout the study

		(Farm 1 – Orkney)				(Farm 2 – Lanarkshire)			
		HIGH	LOW	s.e.d.	Sig	HIGH	LOW	s.e.d.	Sig
Fresh weight intake									
Grass silage	(kg/h/d)	23	23			17	19		
Wholecrop wheat	“	-	-			1.5	1.75		
Barley based concentrate	“	2.2	0.7			2.0	-		
LW @ weaning	(kg)	299	300	11.2		308	308	10.7	
LW @ turnout	“	393	377	12.2		386	353	13.0	*
LW @ housing	“	522	525	11.4		483	462	12.5	
DLWG winter period	(kg/day)	0.49	0.36	0.024	***	0.51	0.29	0.042	***
DLWG summer period	“	0.76	0.87	0.040	***	0.77	0.86	0.061	



**Figure 1** Summer vs winter DLWG (Compensatory growth) in suckler bred animals on two farms in Scotland

**Conclusion** The results indicate that compensatory growth can be exploited to beneficial effect on commercial suckler farms under appropriate circumstances and that the quality of summer grass available may be a key factor in the nature of the response.

**Acknowledgements** QMS provided financial support for this work and we also grateful to D Baillie and E Sinclair for the provision of farm facilities throughout this study.