Modelling the effect of compensatory growth on the profitability of dairy calf to beef production systems

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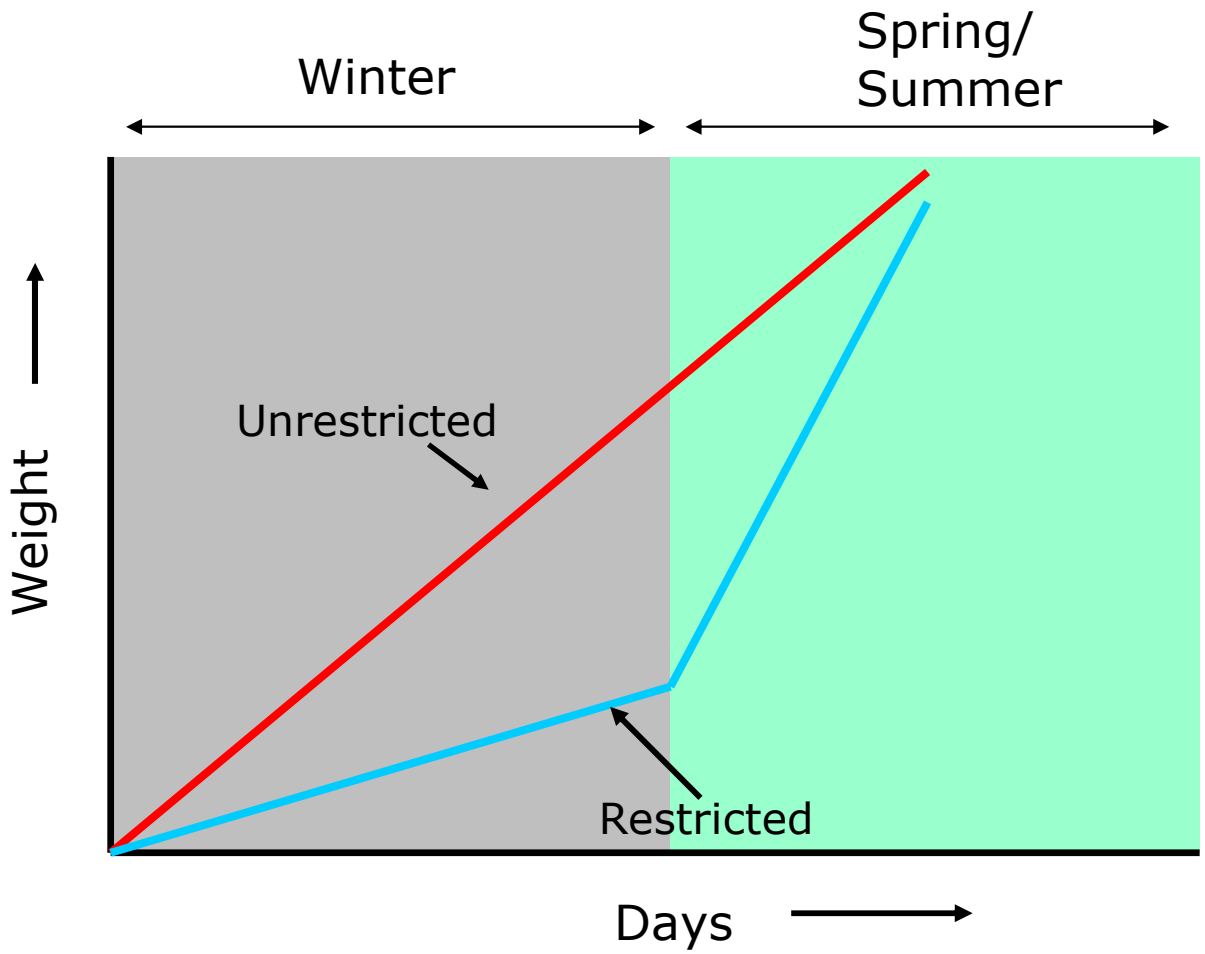
Introduction

- Feed costs make up a large proportion of variable costs on cattle farms (Hennessy et al., 2011)
- Reducing feed costs is critical for improving profitability
- Exploiting compensatory growth

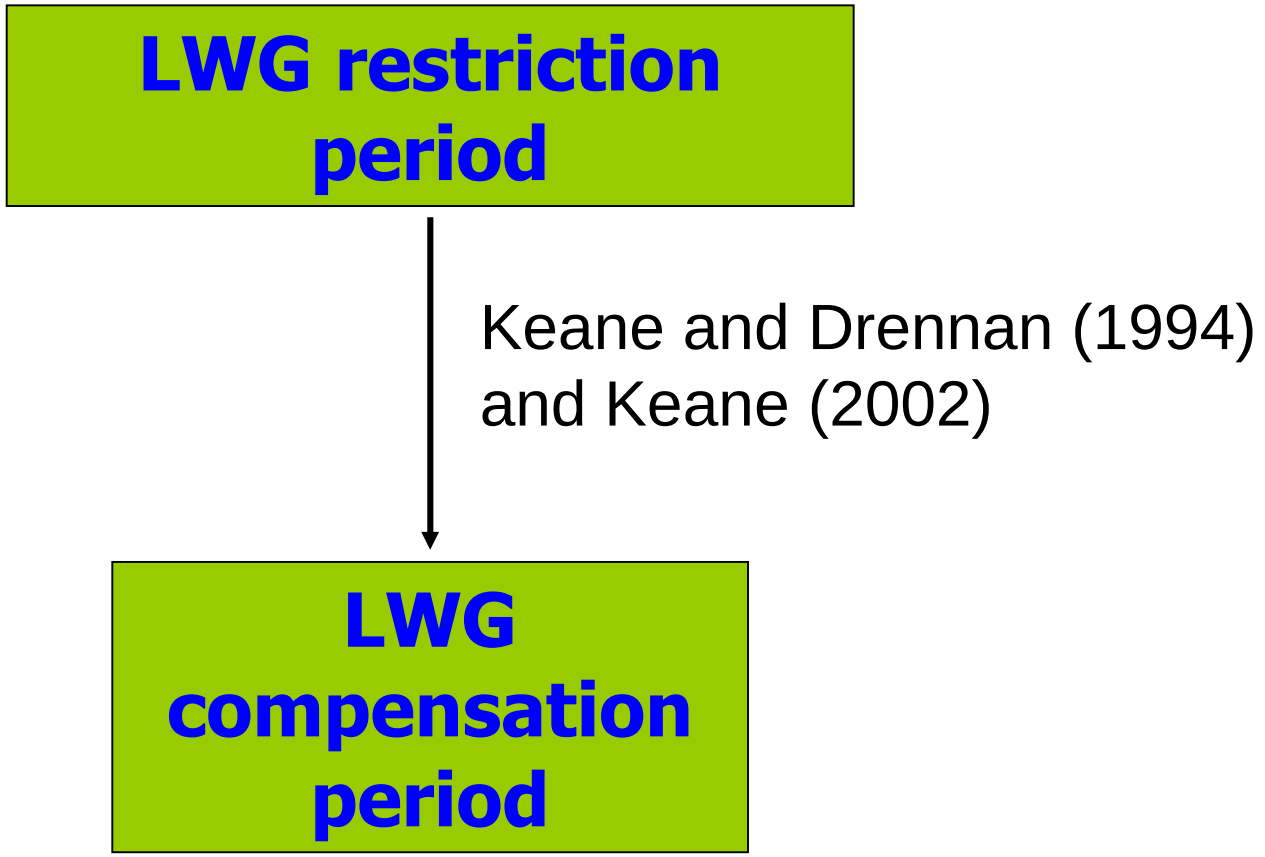
Compensatory Growth



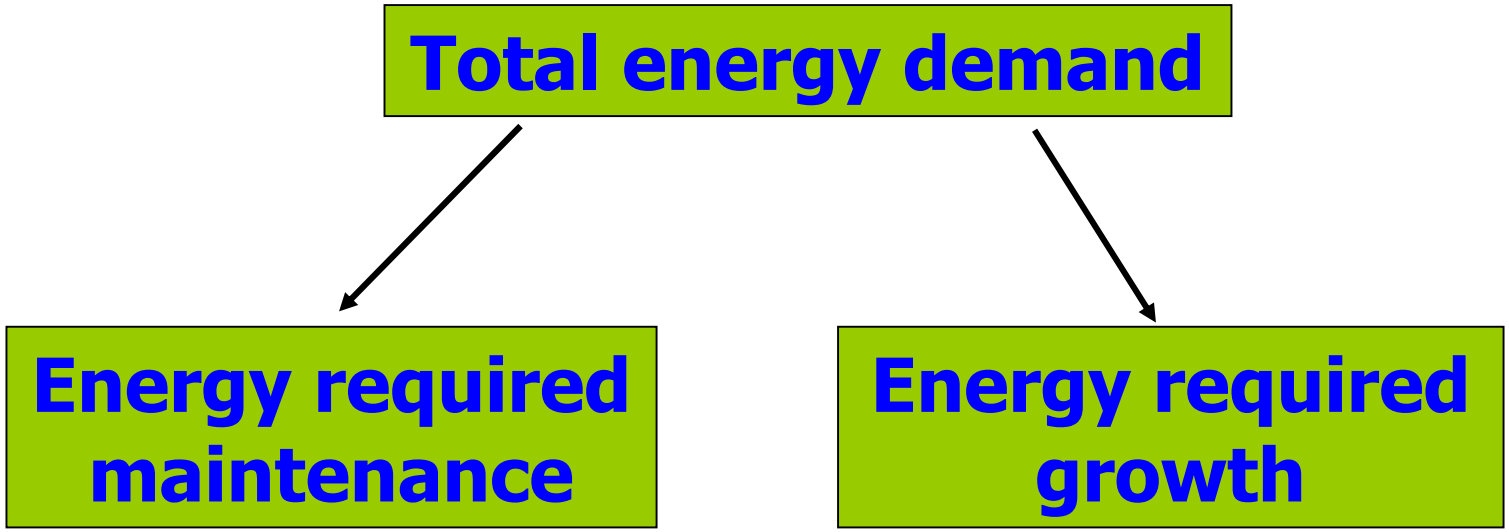
Description of Grange Dairy Beef Systems Model (GDBSM)

- Whole farm, steady state, deterministic, simulation model
  - Single value outputs
- Bioeconomic model
  - Energy driven biological model (NE, Jarrige, 1989; O'Mara et al., 1997; Crowley, 2001)
  - Farm systems and inventory driven physical model
  - Whole farm economic appraisal

Modelling compensatory growth (LWG)



Modelling compensatory growth (energy)



Energy required for maintenance reduced by 20% for 90 days

24 month steer

Restriction period

1st summer

1st winter

Compensation period

2nd summer

2nd winter

28 & 30 month steer

1st summer

1st winter

2nd summer

Restriction period

2nd winter

Compensation period

3rd summer

Assumptions

Area farmed 50 ha
Two silage harvests

Concentrate price
€250/t fresh

Fertiliser price
CAN €340/t
Urea €440/t

R3 steer beef price
€3.57/kg

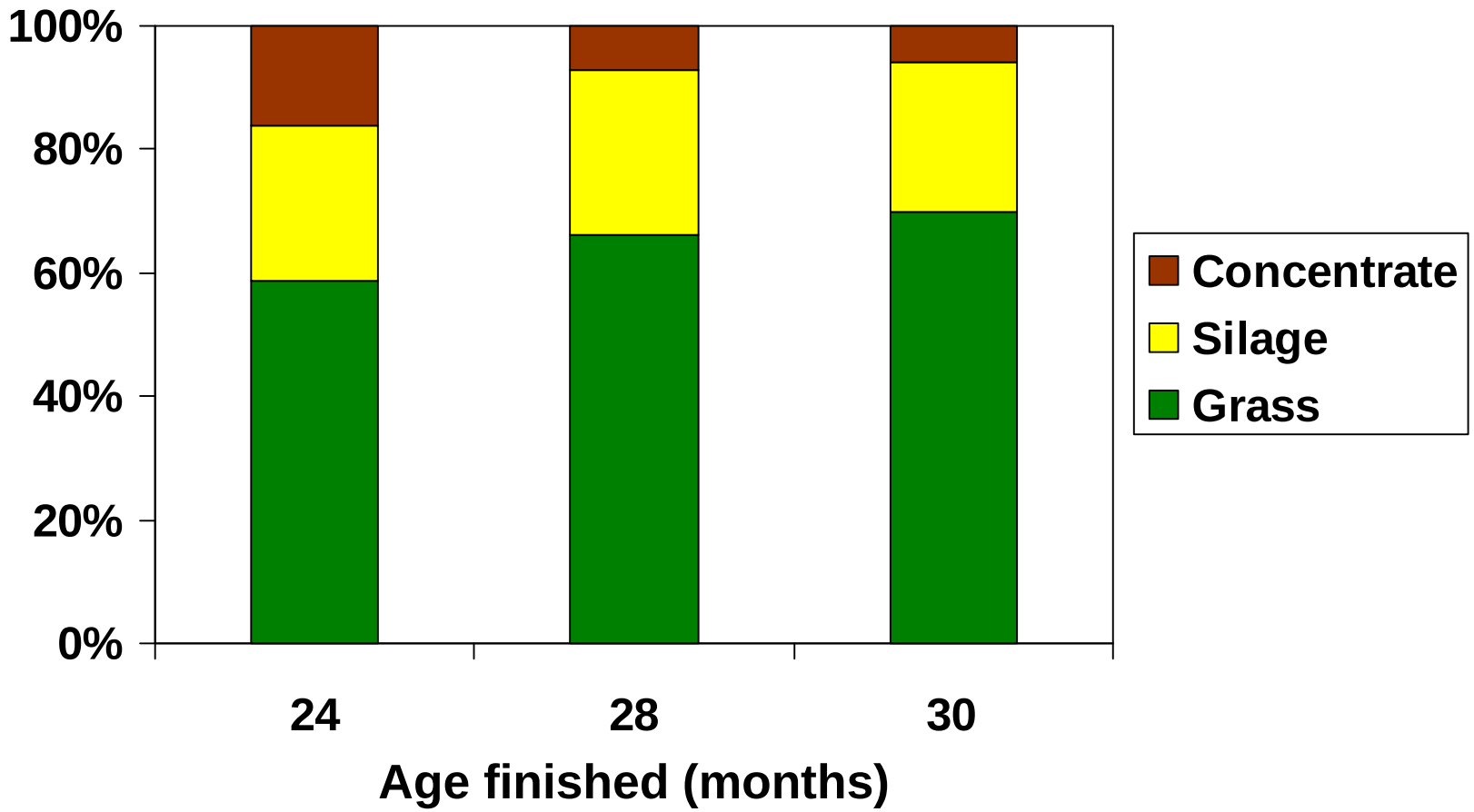
Calf price €280/head

Steers finished at 24, 28 & 30 months age

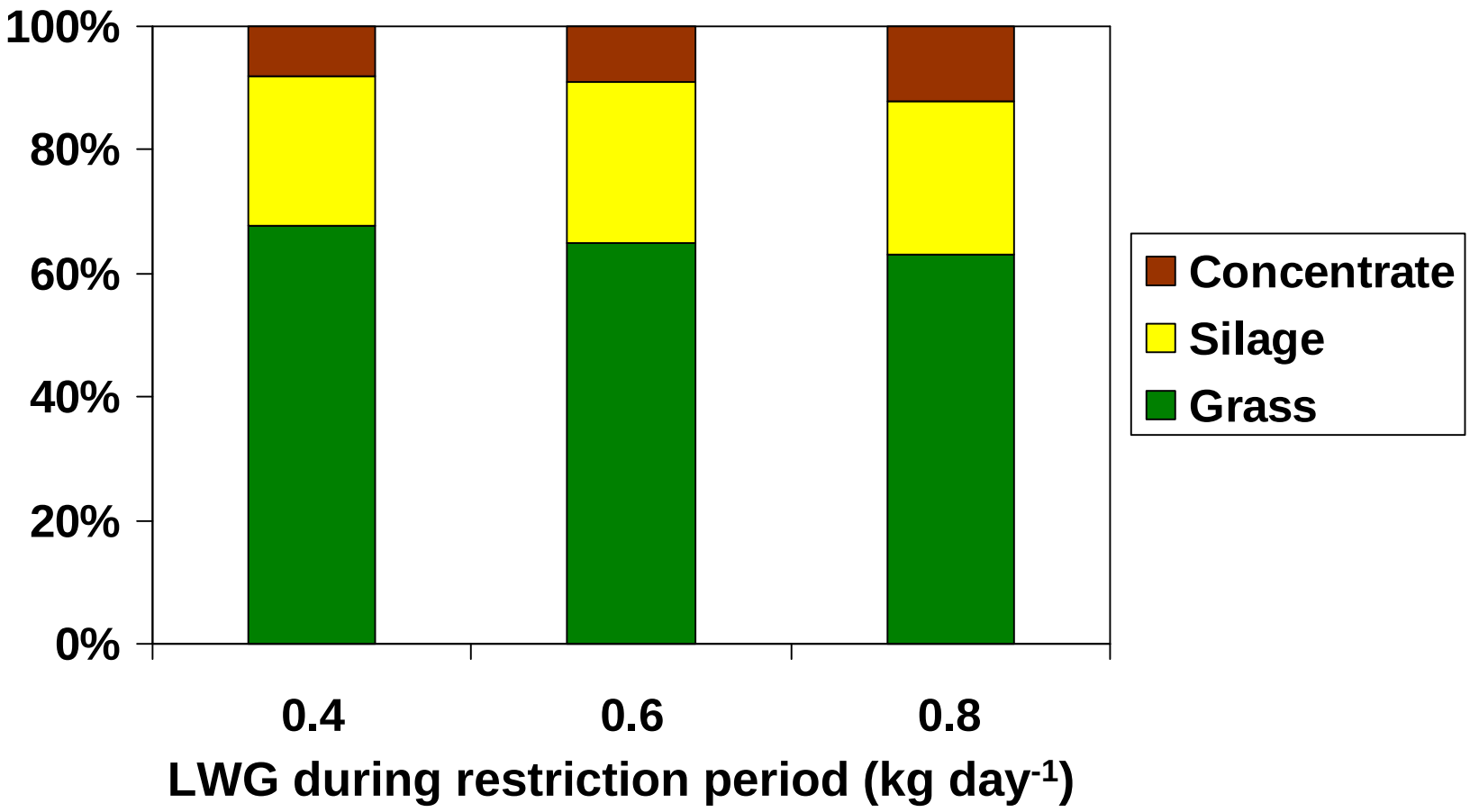
Physical results

Finishing age (months)	24	28	30
No. animals finished (head)	103	81	73
Liveweight output (kg ha^{-1})	1,340	1,104	1,079
Carcass output (kg ha^{-1})	721	606	593

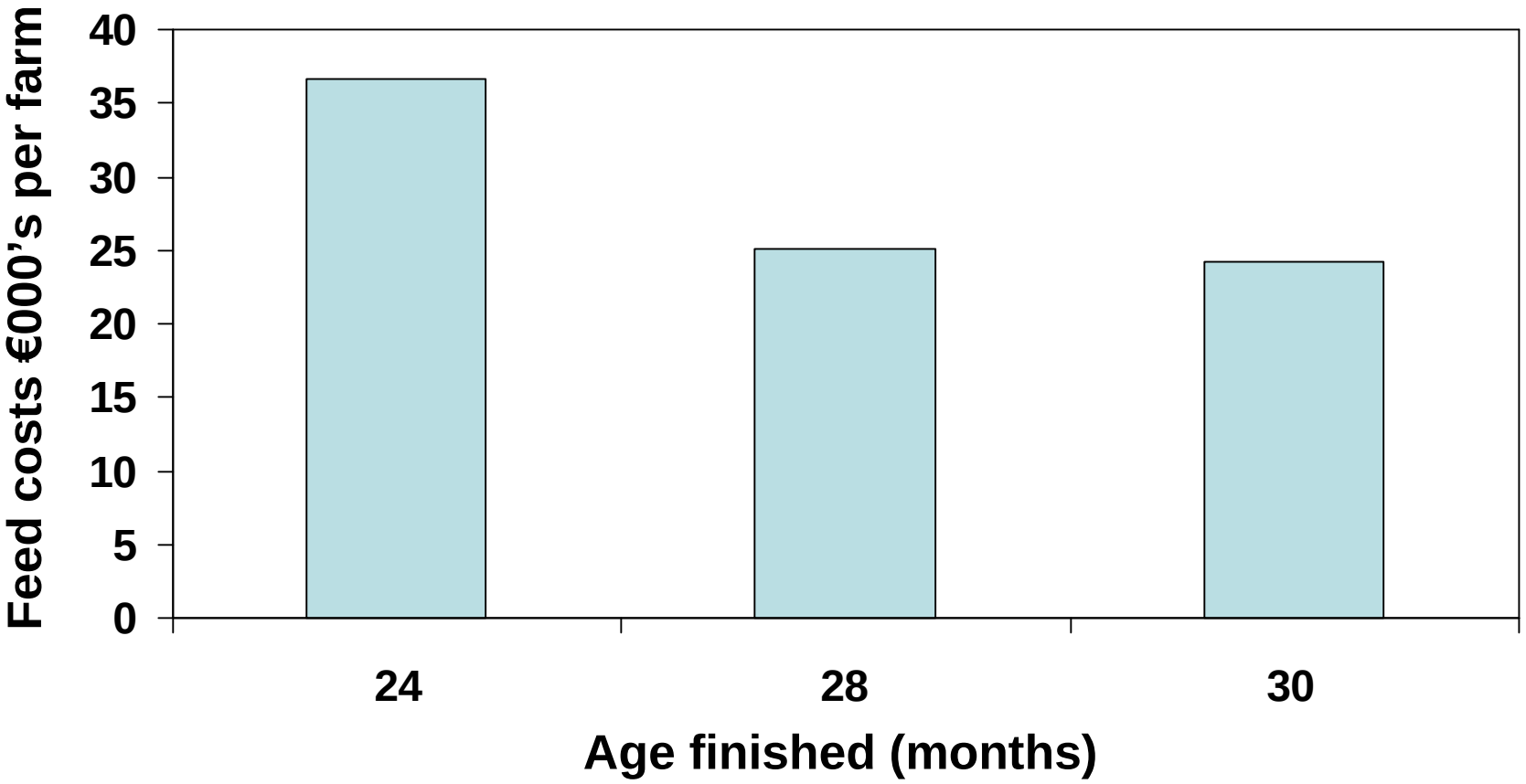
Feed budget (age finished)



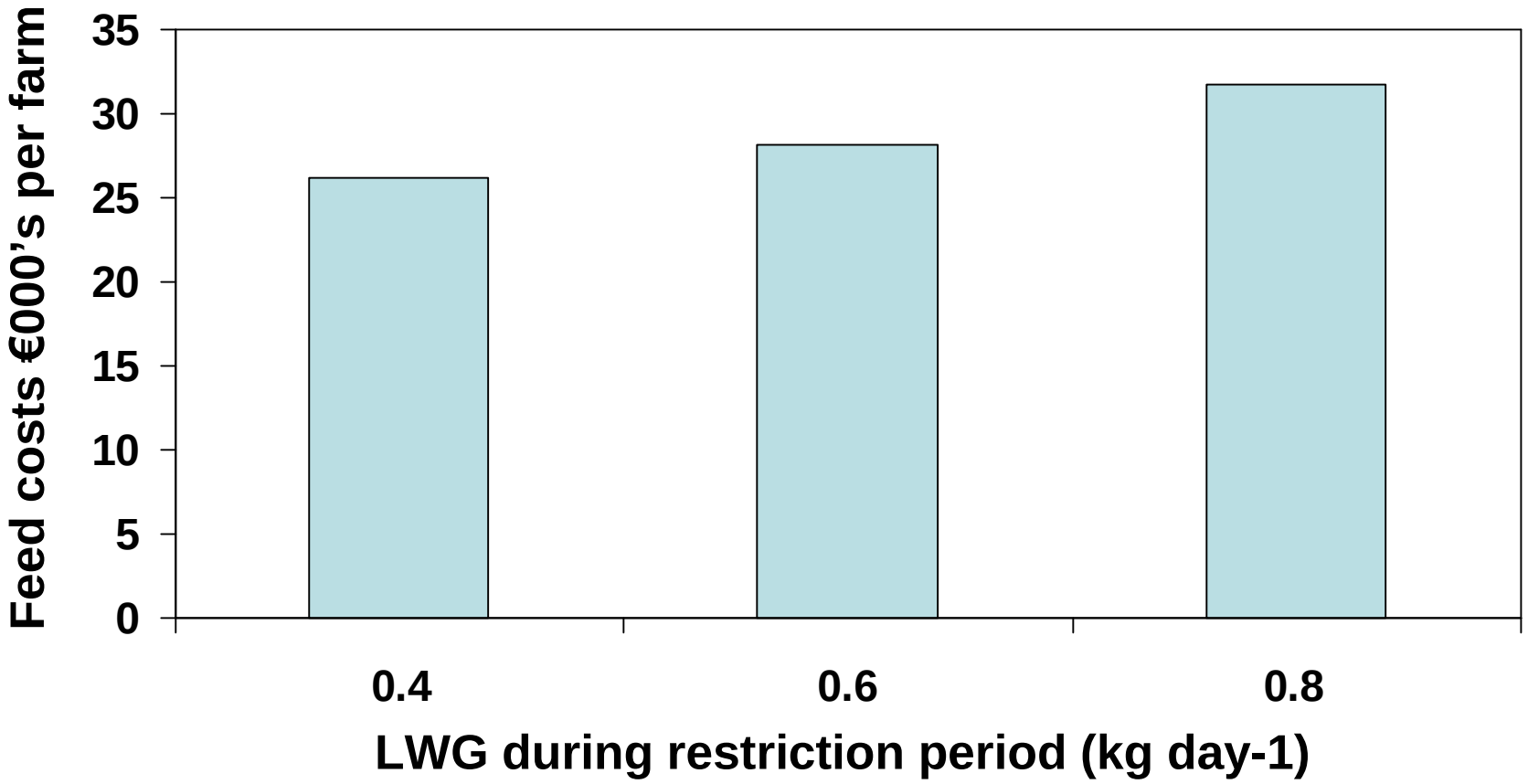
Feed budget (LWG)



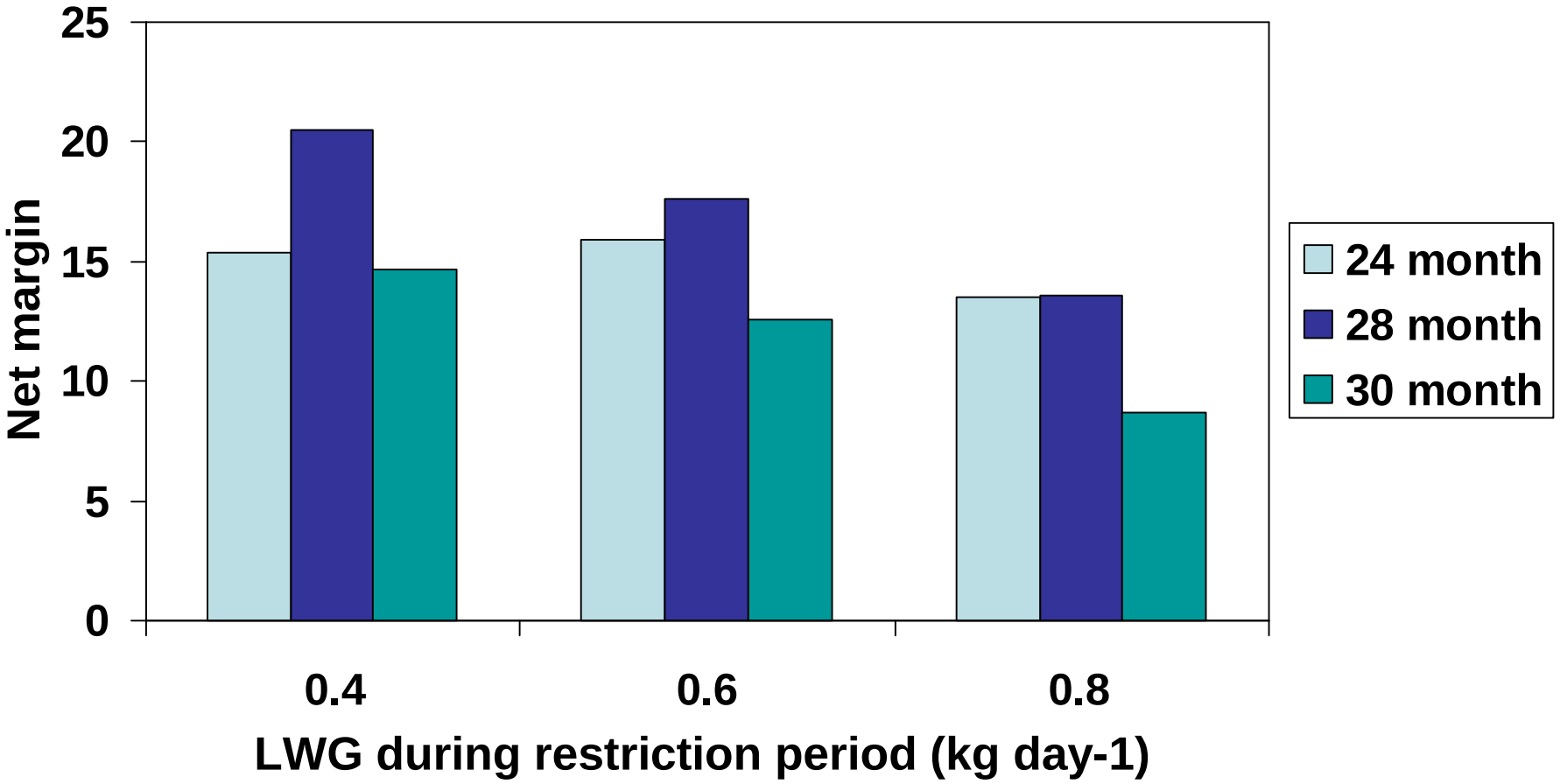
Feed costs (age finished)



Feed costs (LWG)



Net margin €000's per farm



Price sensitivity (effect on farm net margin)

Finishing age (months)	24	28	30
Beef price (+/- 10c/kg)	3,700	3,165	2,920
Calf price (+/- €10/animal)	1,180	935	860
Concentrate price (+/- €10/t)	945	380	350
Fertiliser price (+/- €10/t)	142	180	200

Summary

- GDBSM modified to simulate compensatory growth
- Most profitable system
  - Finishing at 28 months of age and LWG of 0.4 kg day^{-1}
- Very sensitive to beef price changes