Modelling the effect of turnout date to pasture in spring of yearling dairy bred beef cattle

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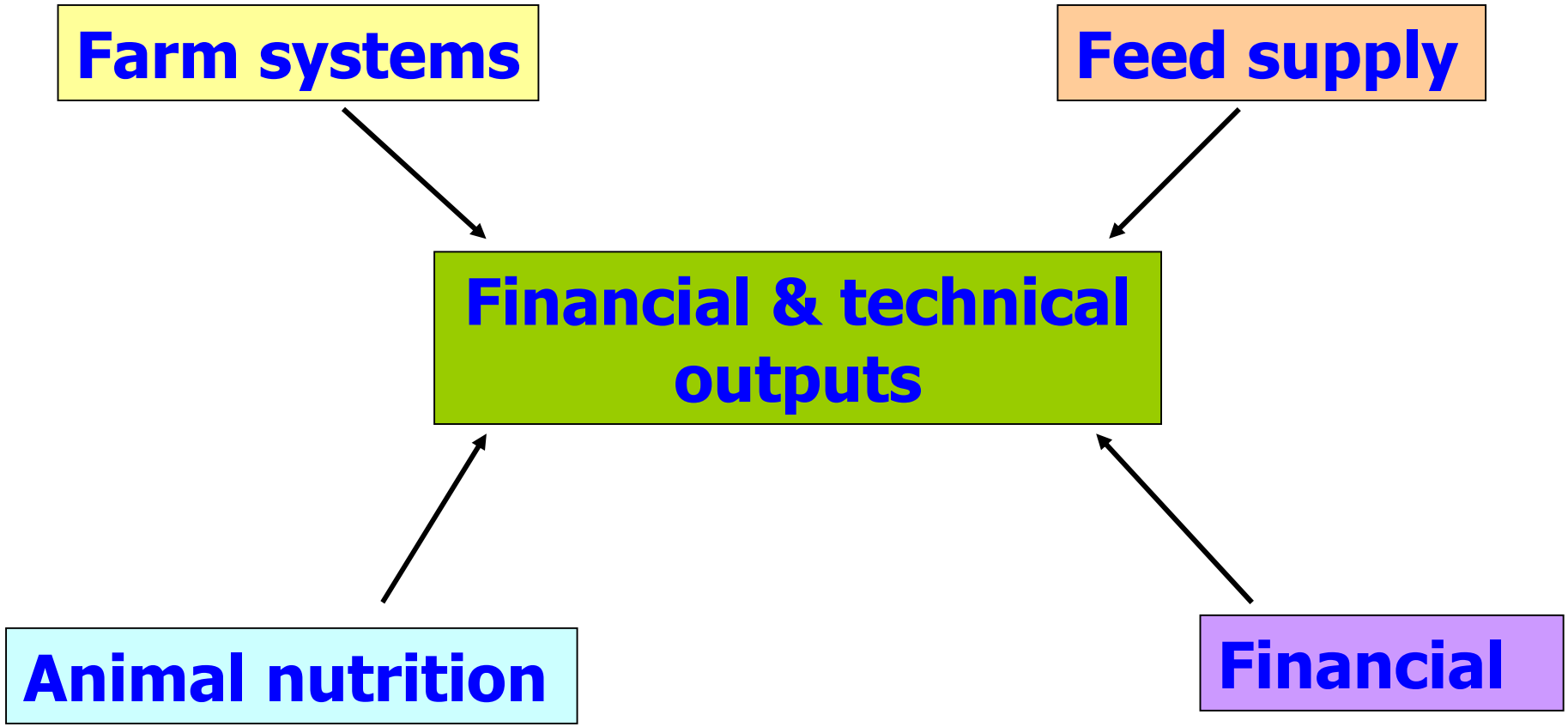
Introduction

- Approximately 50% of all animals for beef production come from the dairy herd (Keane et al., 2009)
- Already farm systems model of suckler beef systems and dairy systems (Crosson et al., 2006; Crosson, 2008; Shalloo et al., 2004)
- Dairy calf to beef model needed
  - Abolition of milk quota 2015
  - Increased volatility in production environment
  - Increased interest in prototype systems

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

GDBSM structure



Farm systems

LW & LWG



Animal numbers

Slurry production

Housing

Animal nutrition

Breed, LW & LWG

Energy demand and intake capacity

Total grazed grass, grass silage & conc. demand

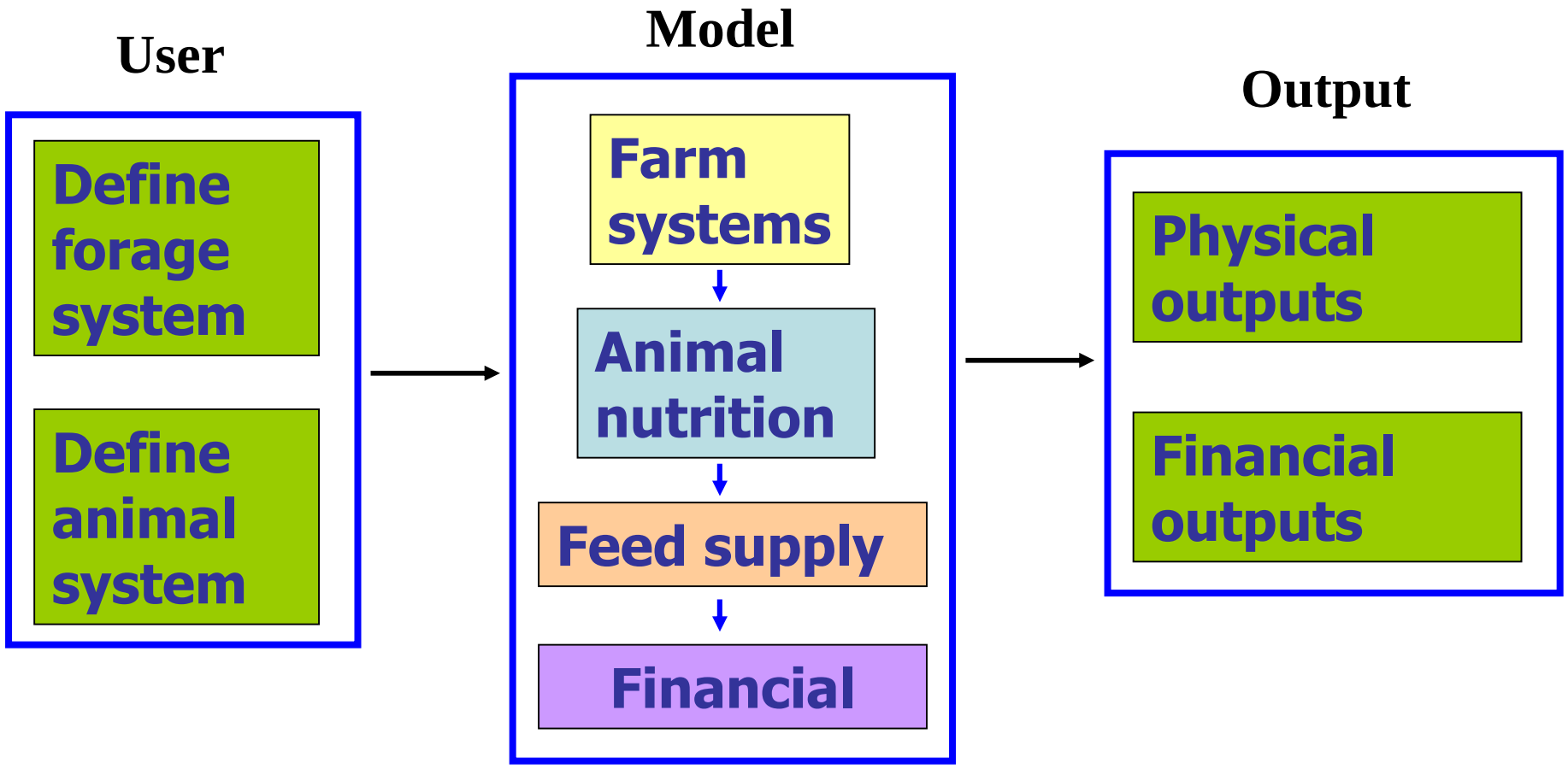
Feed supply

Animal nutrition Inorganic N

Feed utilisation efficiency

Total herbage production

Model operation



Scenarios modelled

Turnout date

- 1st March, 15th March and 1st April

- Stocking rate
  - Low (170 kg organic N ha^{-1})
  - High (250 kg organic N ha^{-1})

- Carcass weight 352 kg

Assumptions

Crossbred dairy beef calf price €186/head

Concentrate price €250/t fresh

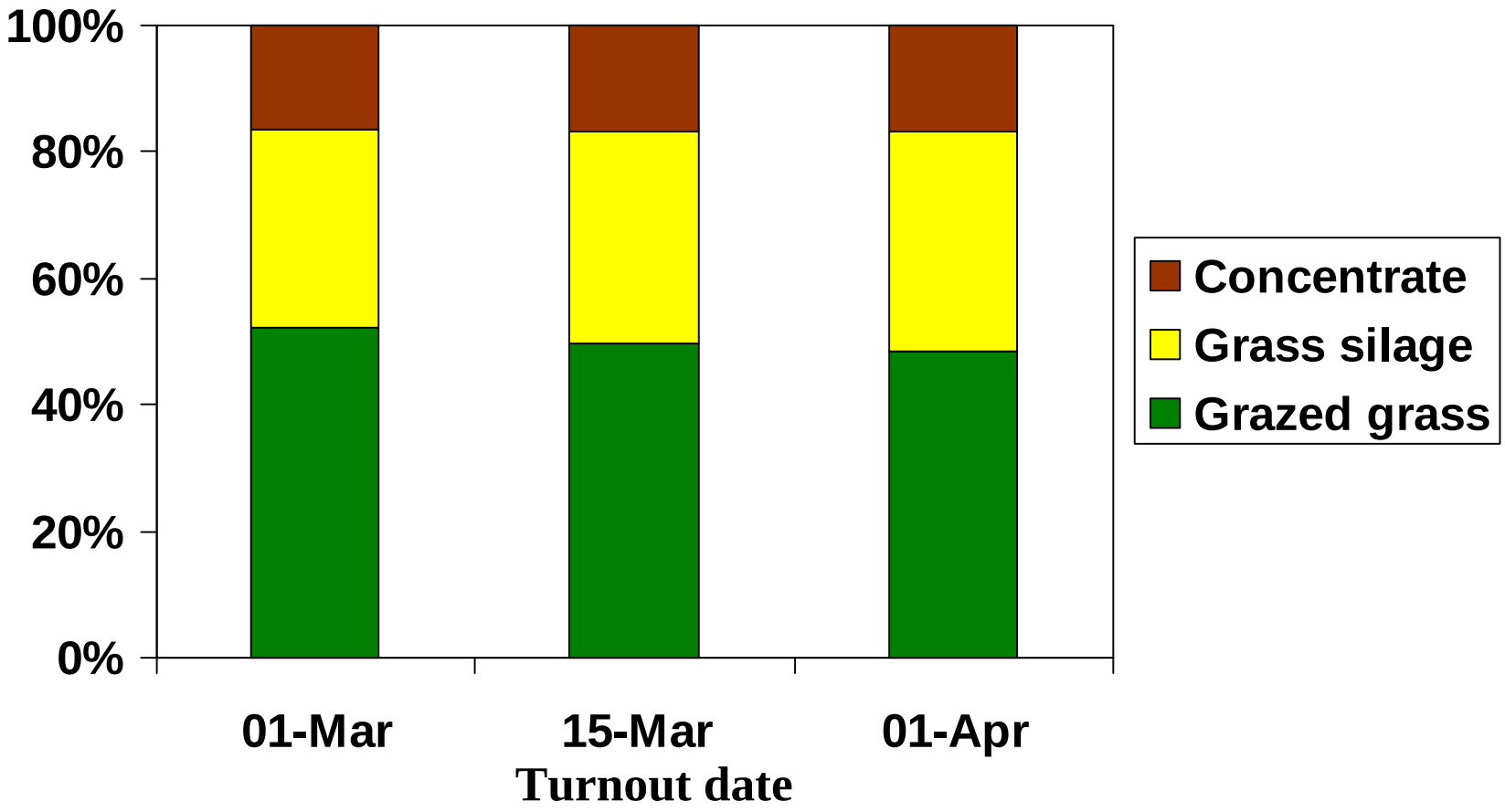
Fertiliser price
CAN €253/t
Urea €332/t

R3 steer beef price €3.05/kg

Area farmed 50 ha
Two silage harvests

Steers finished at 24 months age

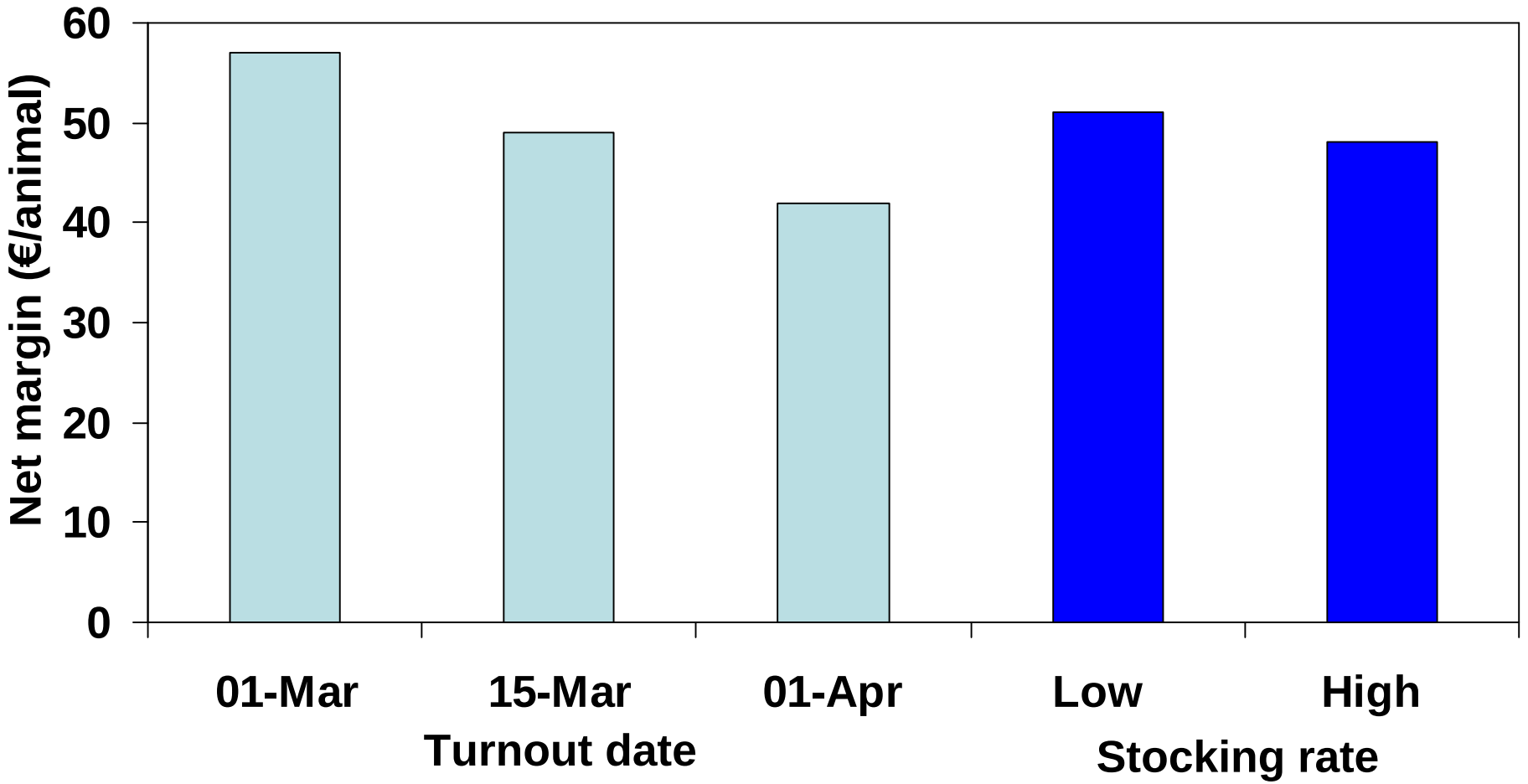
Annual systems feed budget



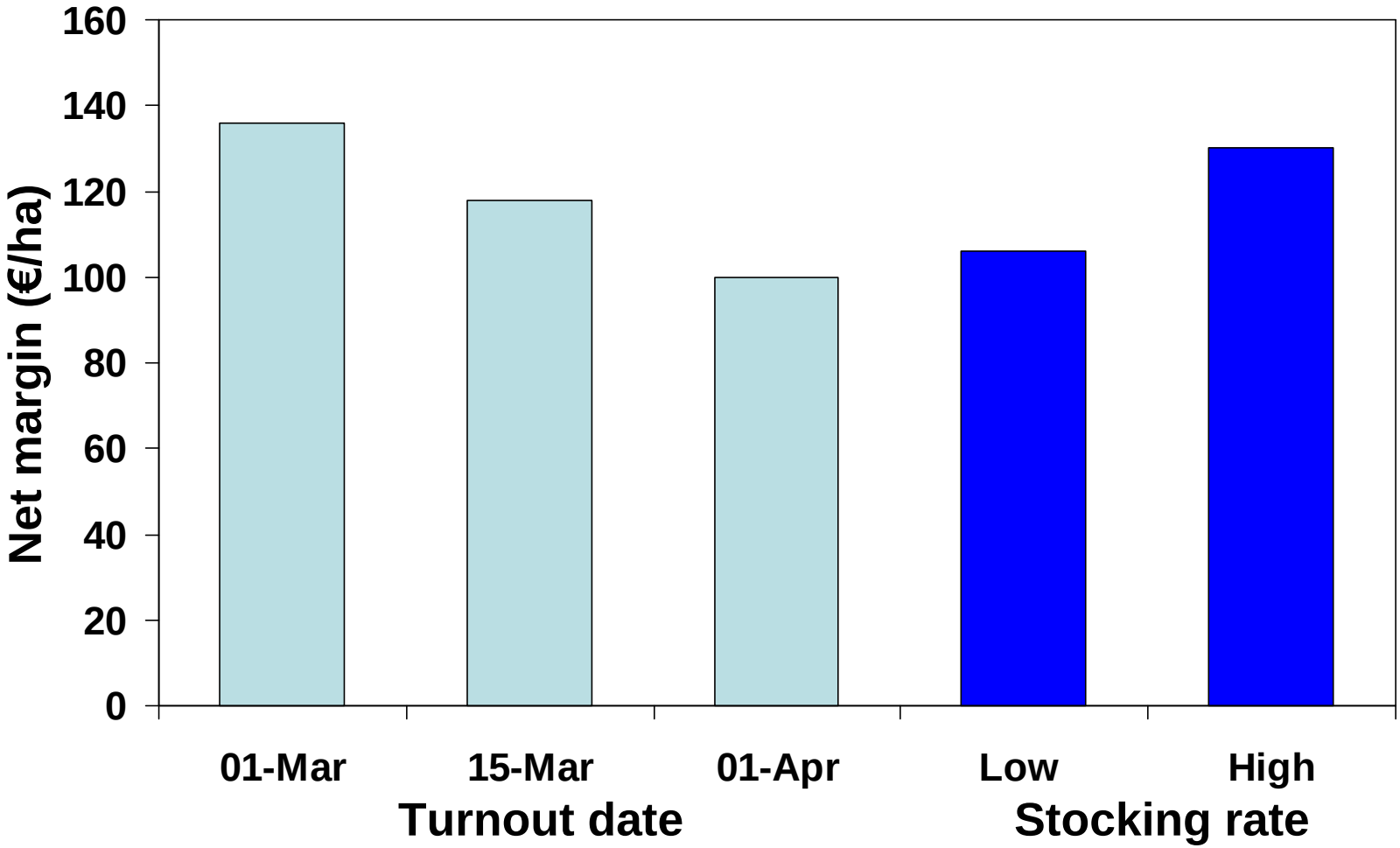
Physical results

Stocking rate	Low	High
No. animals finished (head)	103	136
Liveweight output (kg ha^{-1})	1293	1712
Carcass output (kg ha^{-1})	724	960

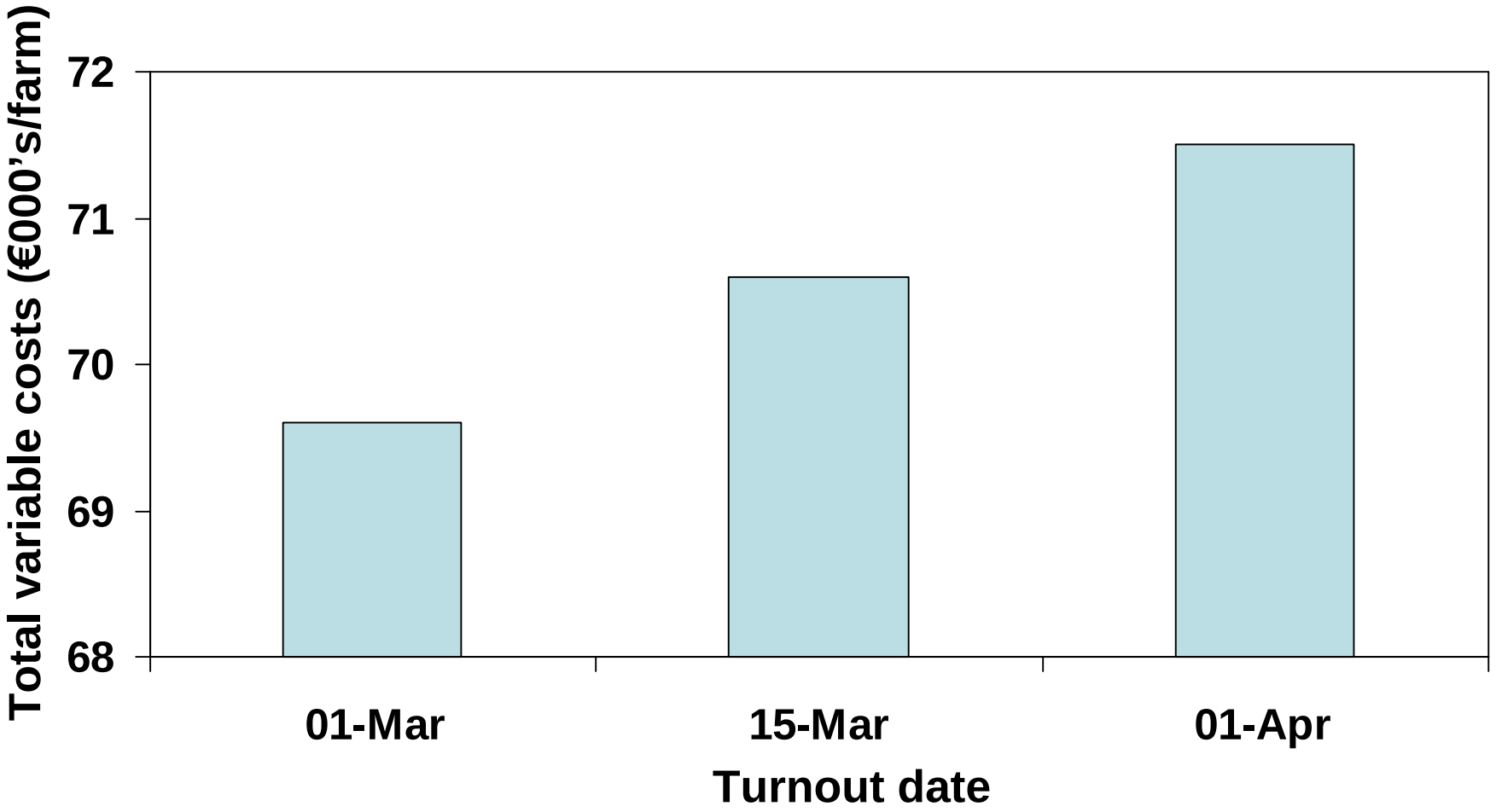
Margin analysis (€/animal)



Margin analysis (€/ha)



Turnout date costs analysis (€/farm)



Summary

- Most profitable system
  - Per animal turnout 1st March low SR
  - Per hectare turnout 1st March high SR

- Benefit of advancing turnout date by 1 day
  - €0.47 animal^{-1}
  - €1.17 ha^{-1}