

Rotorua allocation modelling



STAG update 16 February

Three purposes to the modelling

1. Overall economic impact on the catchment
2. Understanding the feasibility of the integrated framework
3. Understanding the *relative* impacts of different allocations

Initial allocation options

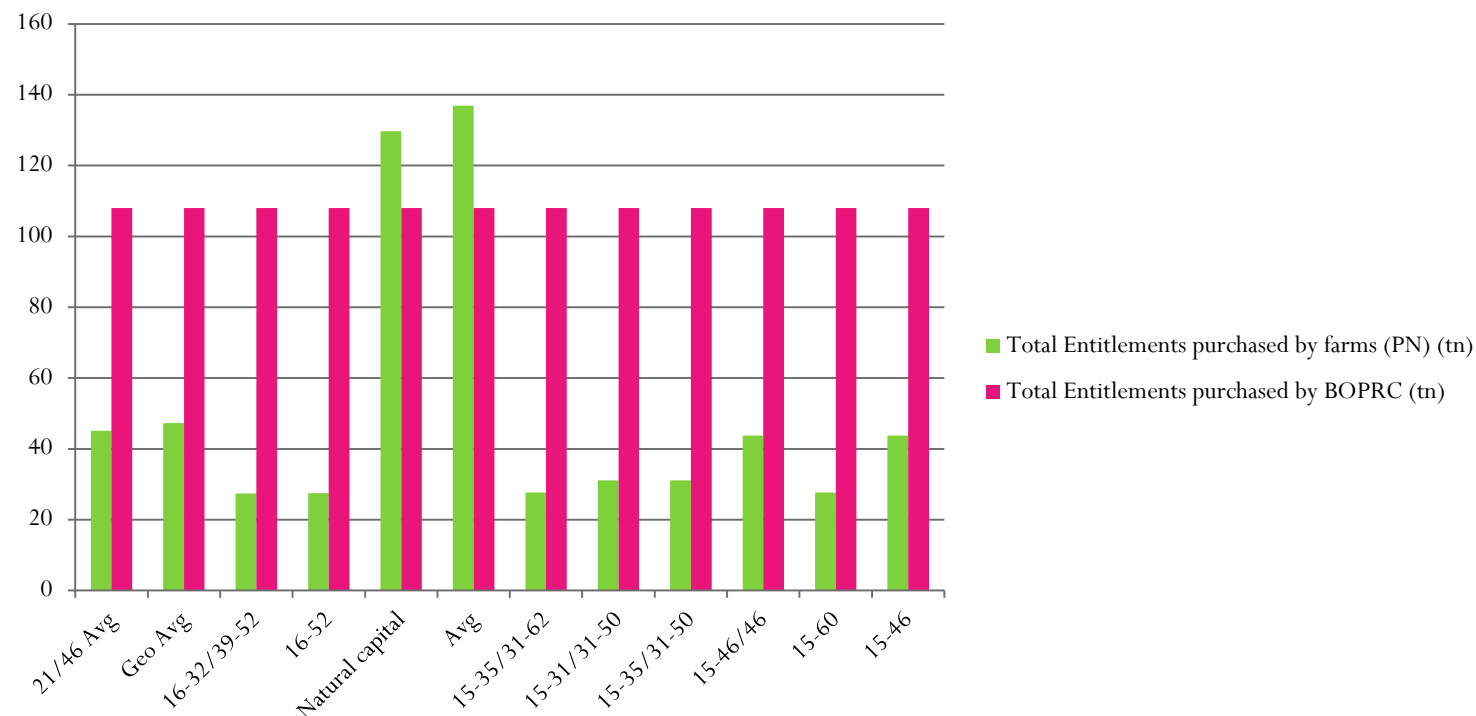
Option	Description
Sector averages	Flat rate averages for dairy and drystock (46 and 21kg/ha/yr)
Sector averages geophysical	Averages adjusted for geophysical impacts on leaching
Clawback with sector ranges	% clawback from initial benchmarks with drystock in 16-32kg range and dairy in 39-52kg range
Clawback with single range	% clawback from initial benchmarks with all land uses in 16-52kg range
Natural Capital	Allocation based on productivity of the land (based on
Equal allocation	Allowances averaged over land <26d

More allocation options

- 15-35 and 31-60
- 15-31 and 31-50
- 15-35 and 31-50
- 15-46 and 46 (dairy averaging)
- 15-60
- 15-46

Key points

- Sheep and dairy is undertakes significant conversion in the model,
- No intensification from present levels occurs
- No dairy conversion occurs
- Farms only make minor marginal purchases of N in all scenarios except natural capital and averaging, compared to the incentives scheme.



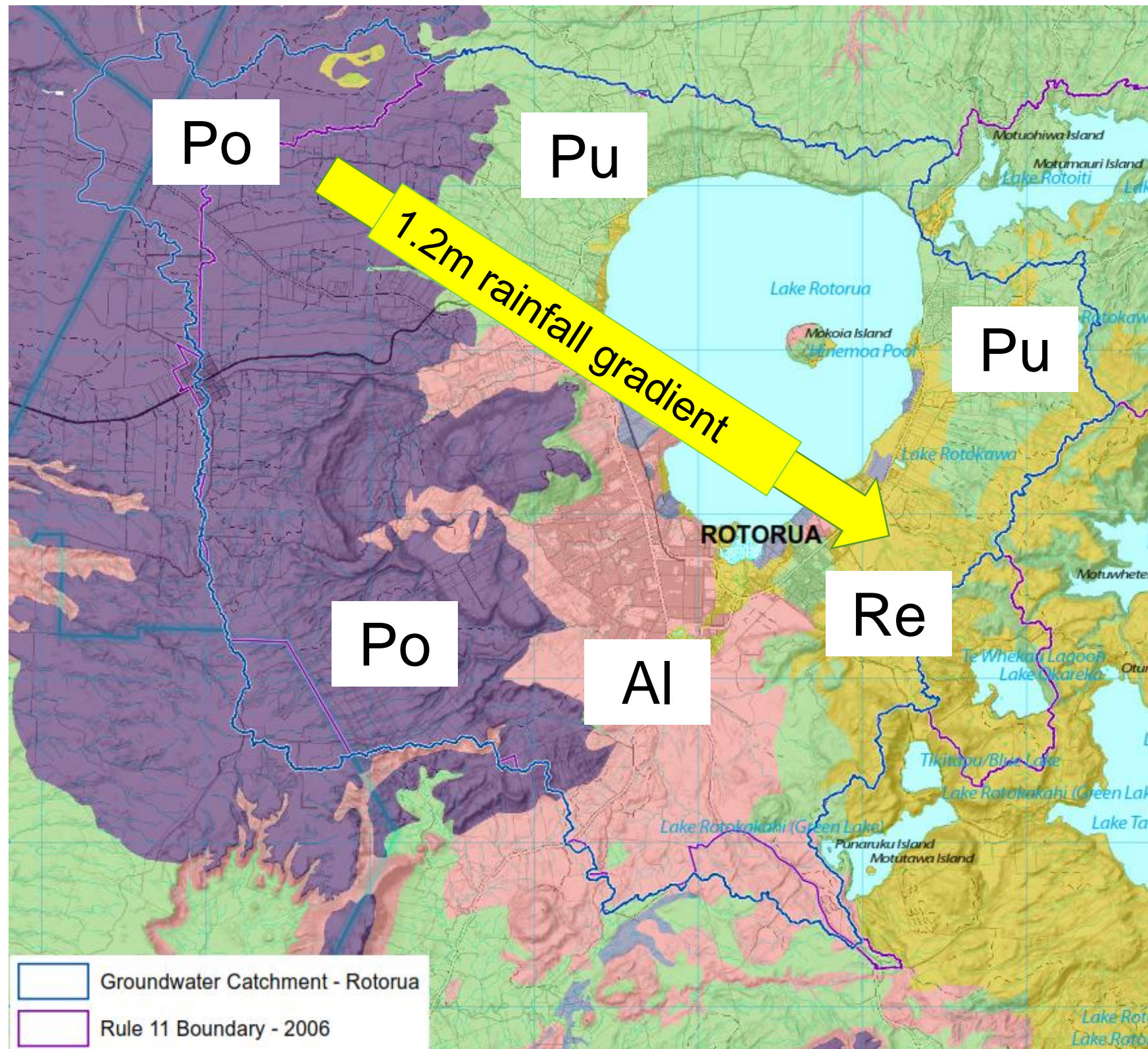
Key points

- Some allocation options look relatively similar at the sector level, but are very different across different farm system types
- Sector averaging has significant cost implications at the farm system level
- Range scenarios have the lowest level of disruption and redistribution
- Ranges are sensitive to the difference between a 50kg cap and a 46kg cap
- Average drystock profits increase due to the sale of NDAs, but also due to more marginal farms being retired. This means that profits going up without NDAs being sold is generally a *bad* sign.

Two key metrics used

1. Amount of money spent/earned from trading NDAs (an indication of distribution)
2. % Change in profit (an indication of mitigation effort)

Soil and rainfall zones

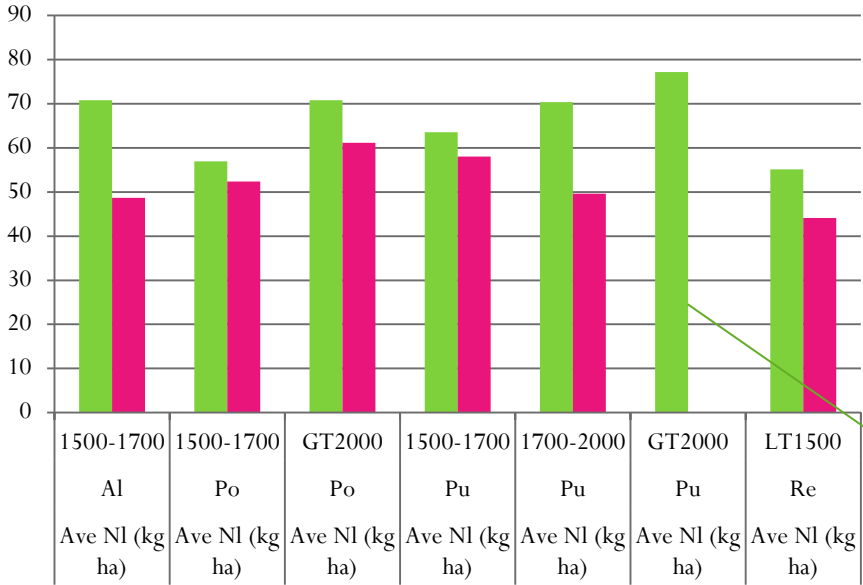


Geophysical zones
Different areas of the catchment are represented by different farm systems in the modelling. These are coded by soil type and rainfall band in these results.

- Pu – Pumice
- Po – Podzol
- Al – Allophanic
- Re - Recent

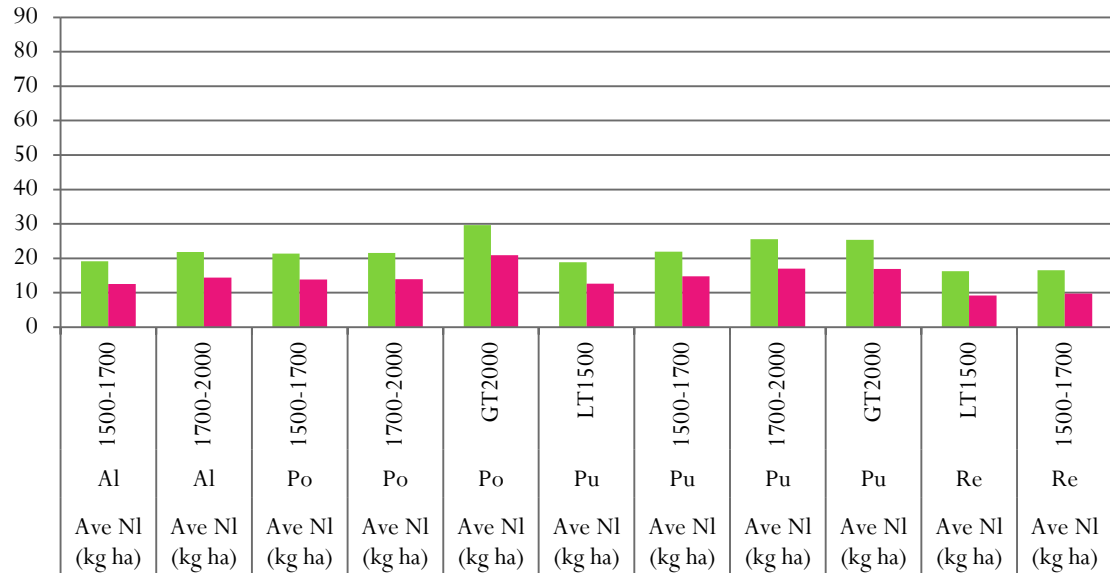
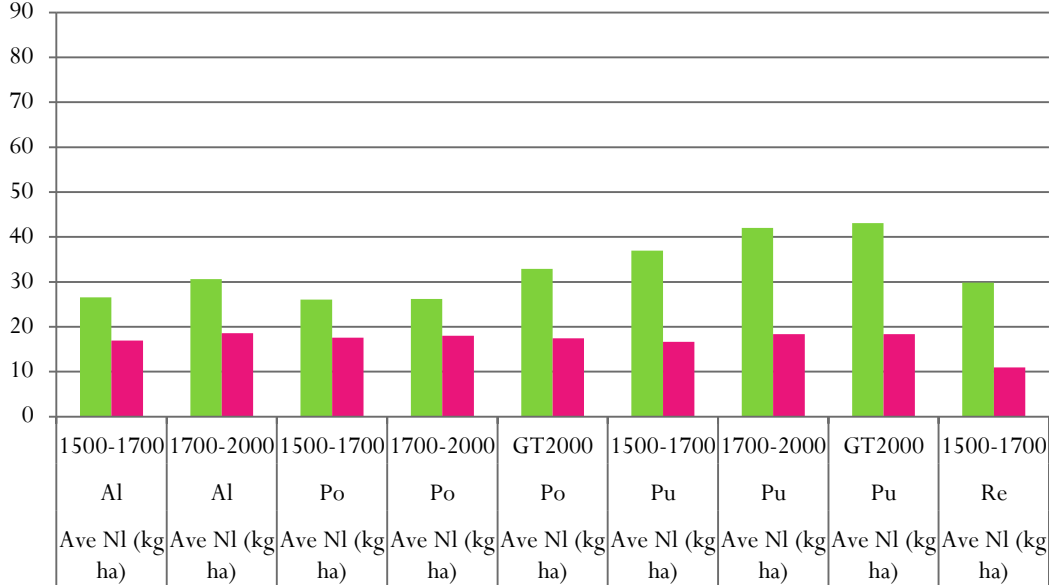
Likely change in N losses by zone

Dairy



High rainfall pumice dairy farming converted to forestry

Dairy support



Sheep and beef

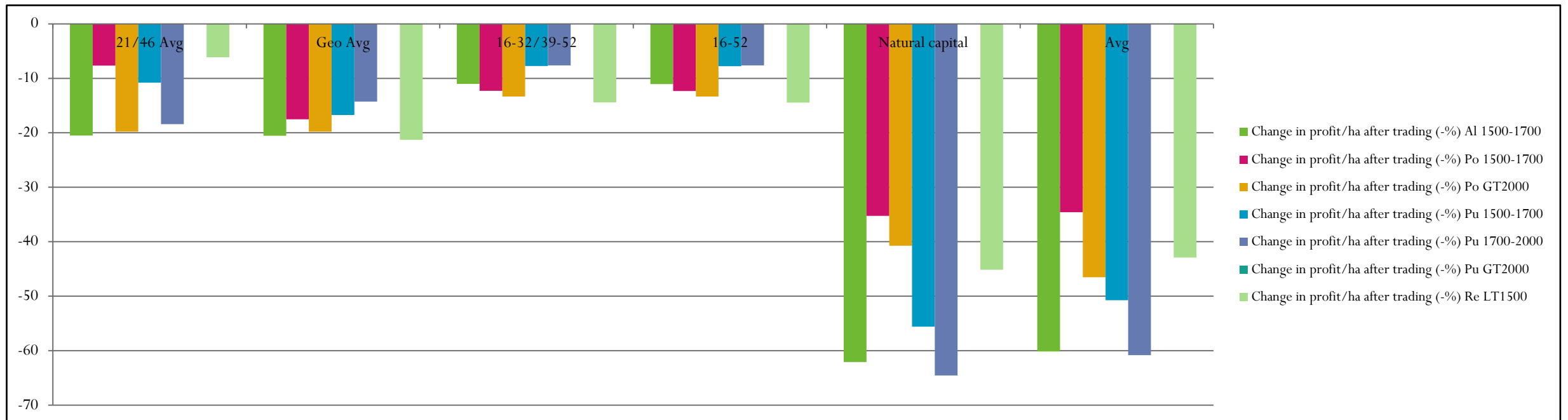
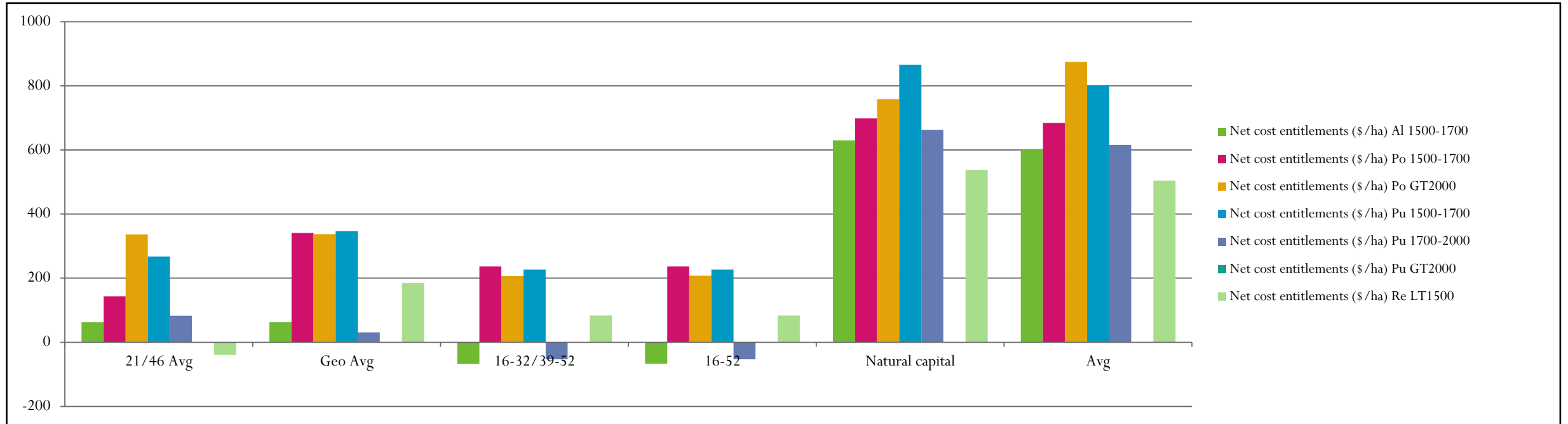


Sheep and dairy

Differences across allocation options

Impacts on dairy farms

Amount of N bought

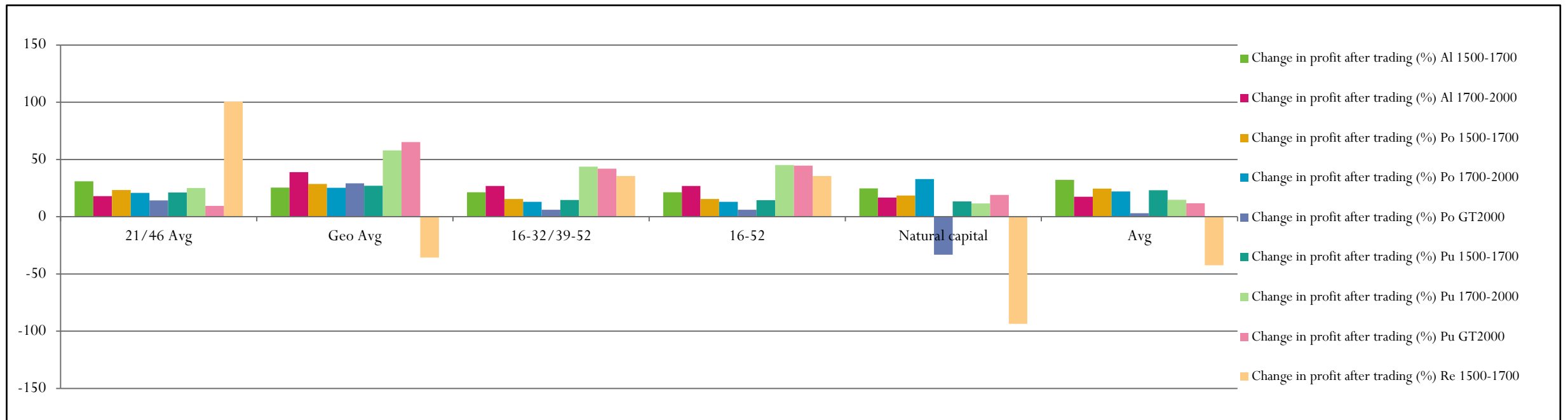
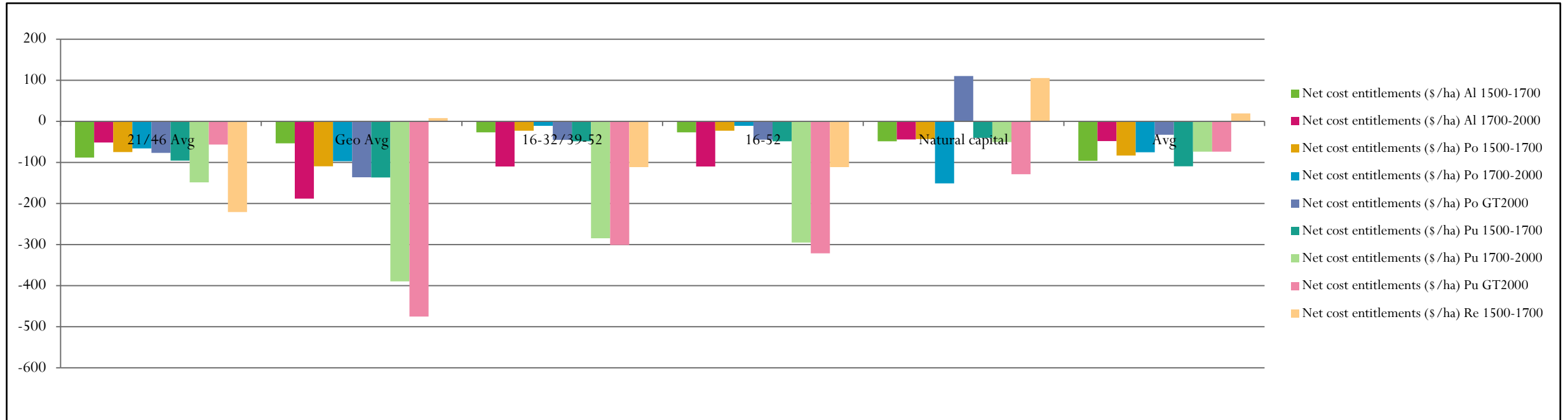


- Some conversion
- Some farms selling N but small amount in terms of area
- Impact of cap drop from 50-46 is large

Impact of allocation on profit

Impacts on dairy support farms

Amount of N bought/sold

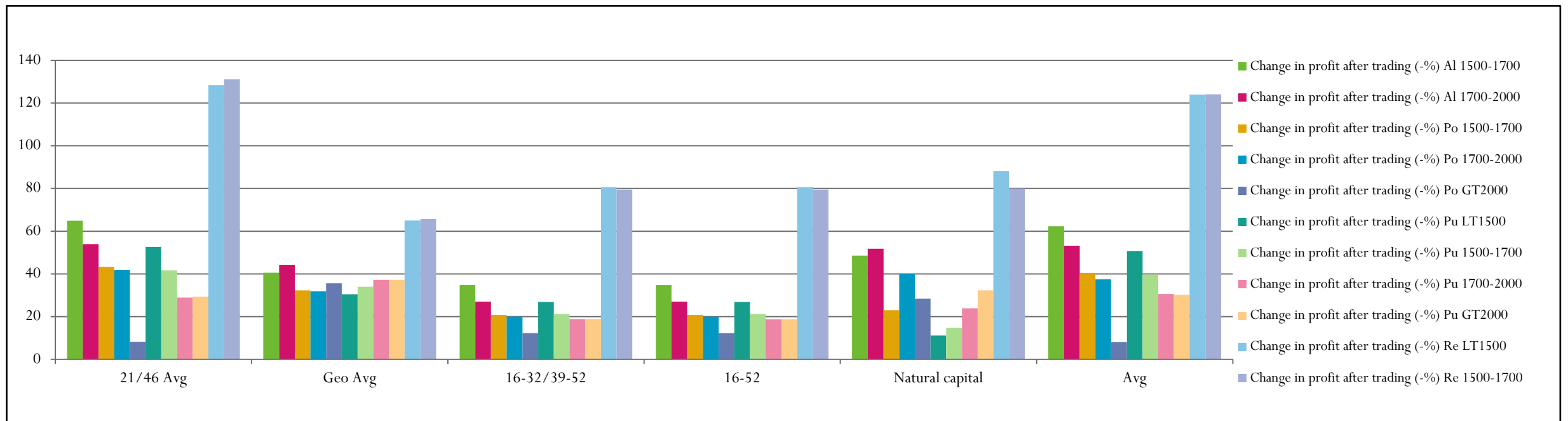
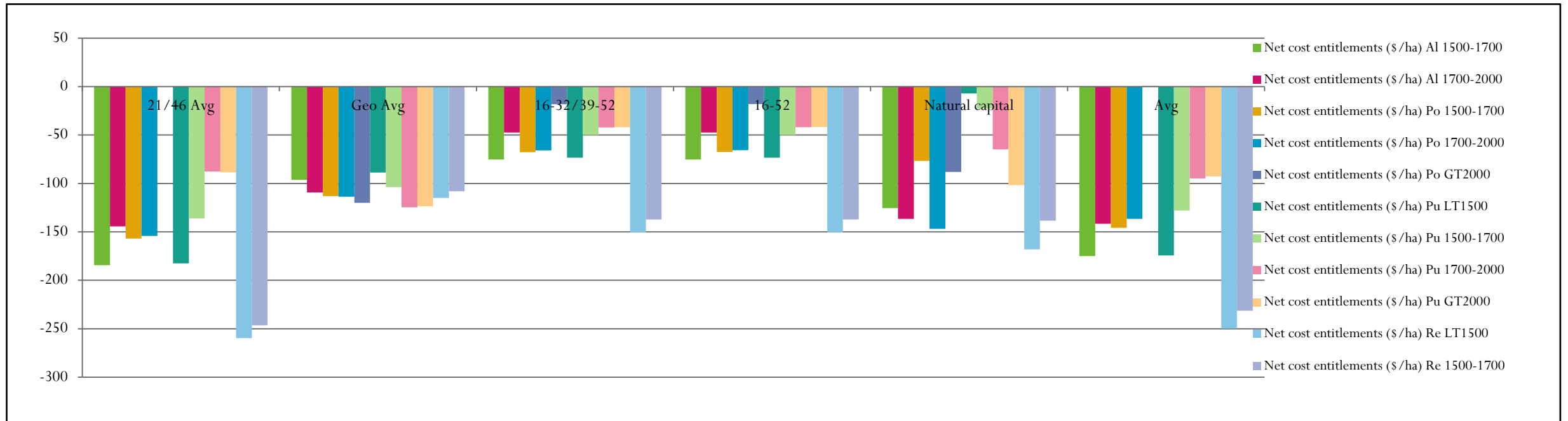


- Dairy support sensitive to geophysical adjustment
- Only very minor impacts of sector ranges vs. single range.

Impact of allocation on profit

Impacts on sheep and beef farms

Amount of N sold

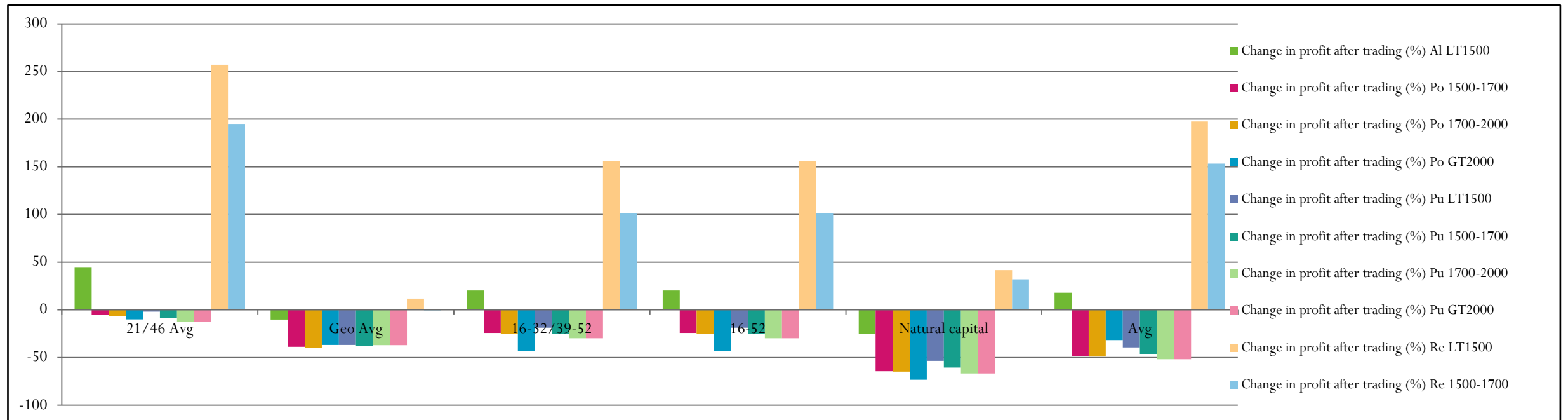
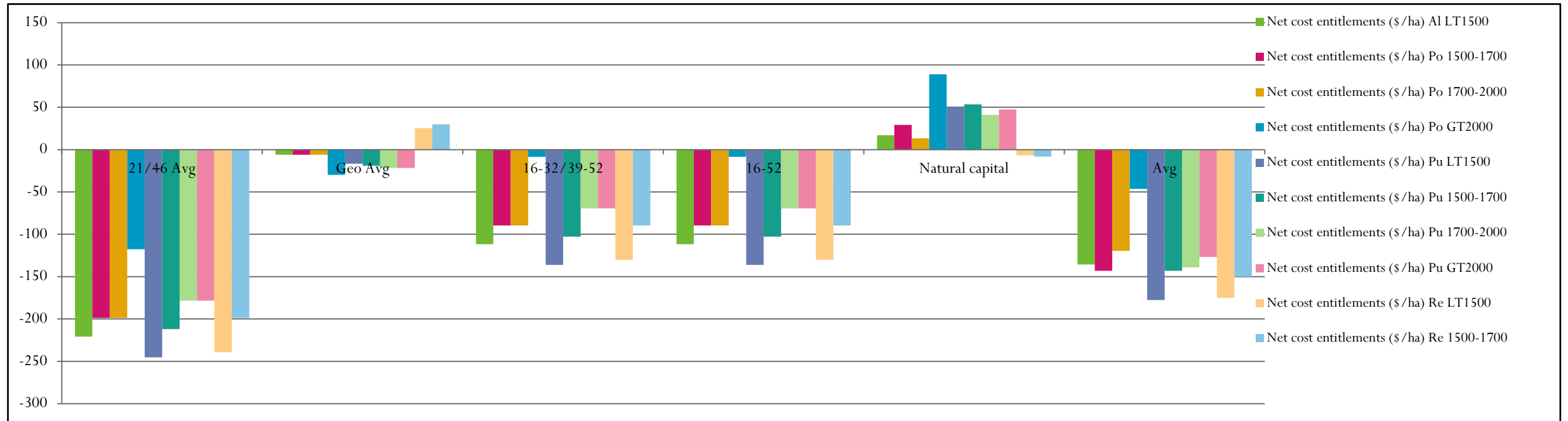


- Profit increases driven by NDA sales AND marginal farm retirement. Not necessarily a good sign if profit increase not associated with sale of NDAs.
- Lower dairy cap seems to drive higher NDA sales.

Impact of allocation on profit

Impacts on sheep and dairy farms

Amount of N bought/sold

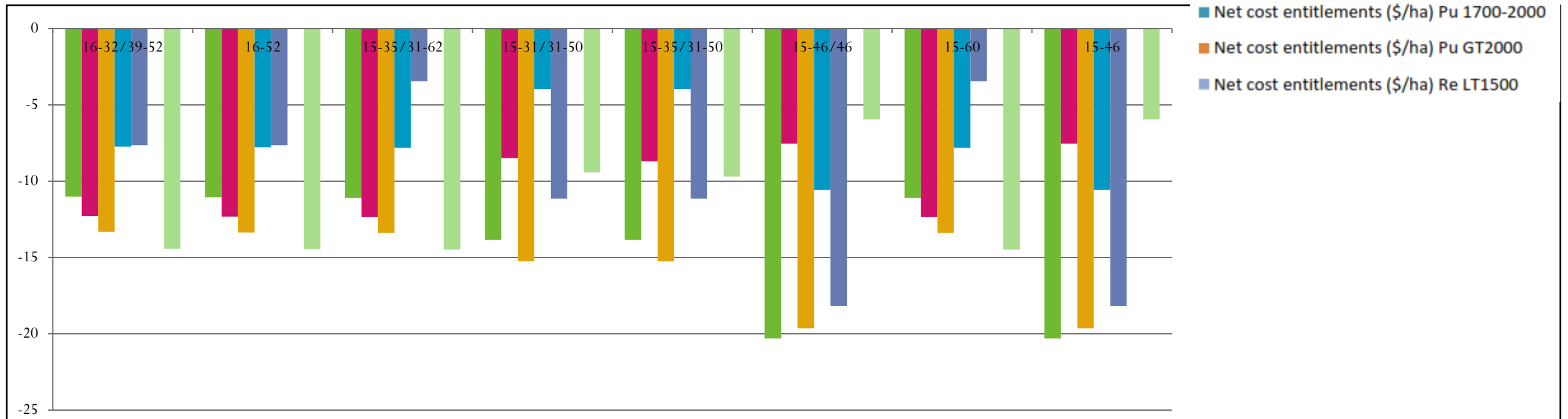
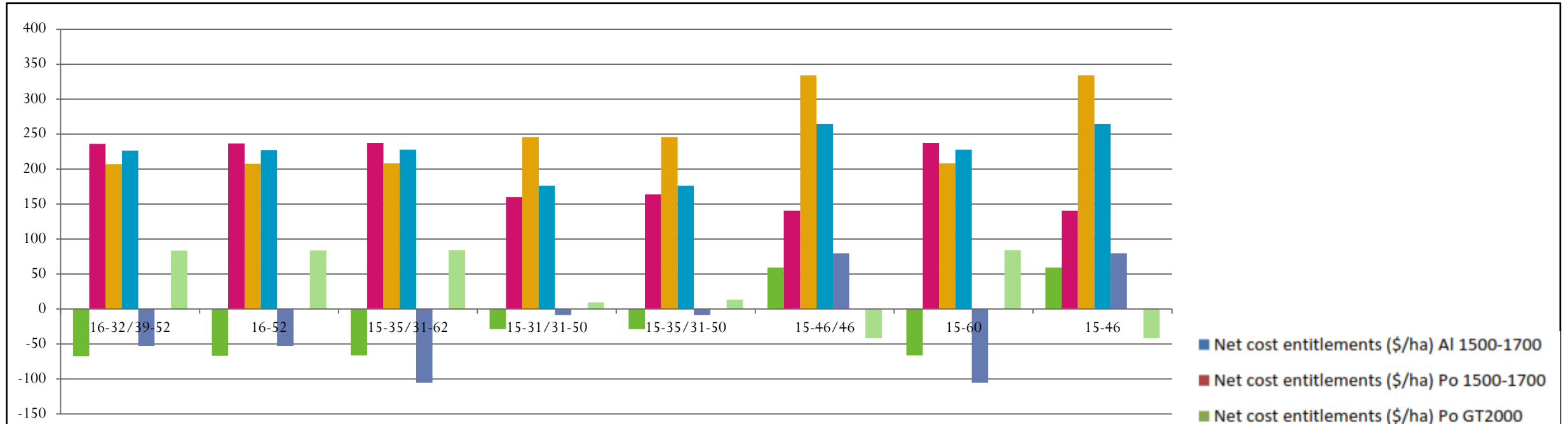


- Significant conversion to forestry occurs across all sheep and dairy areas.
- Large geophysical impacts on costs
- Higher floor seems to drive higher NDA sales.

Impact of allocation on profit

Impacts on dairy farms

Amount of N bought

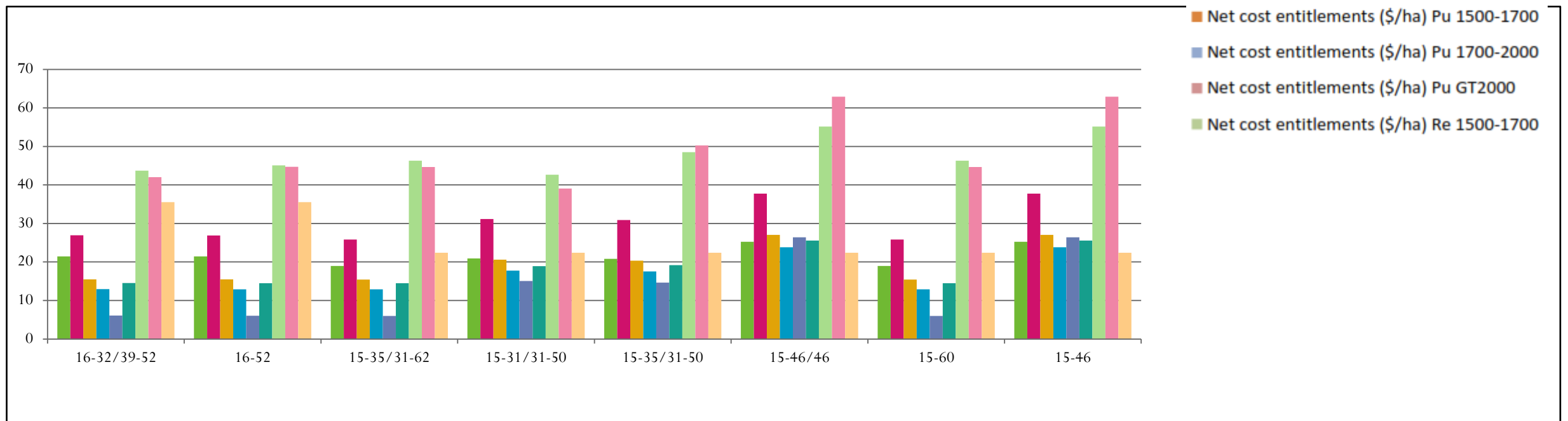
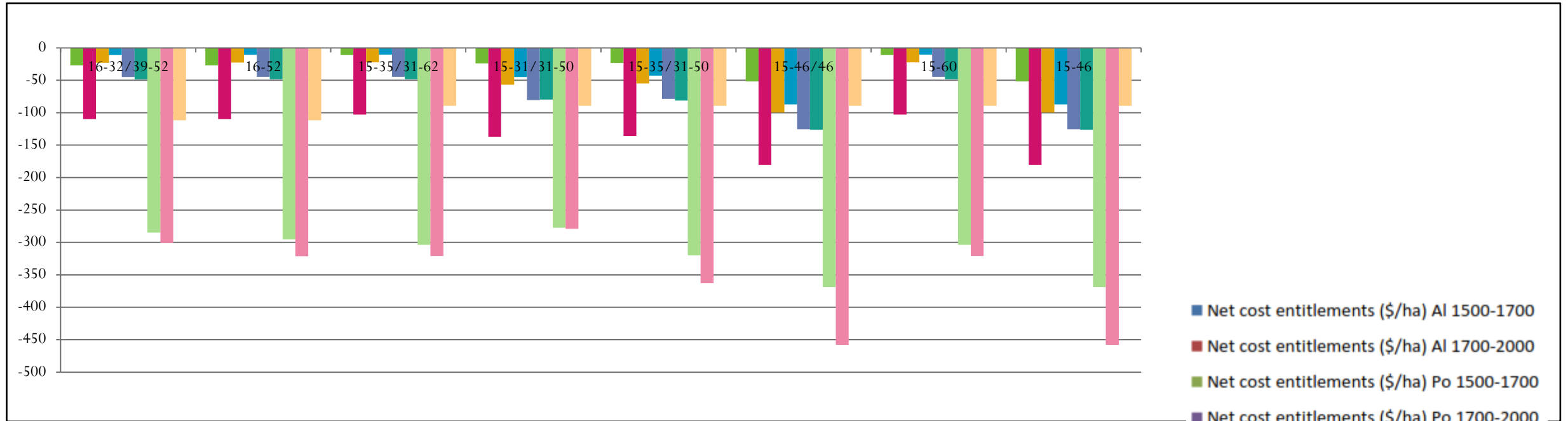


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Impact of allocation on profit

Impacts on dairy support farms

Amount of N bought/sold

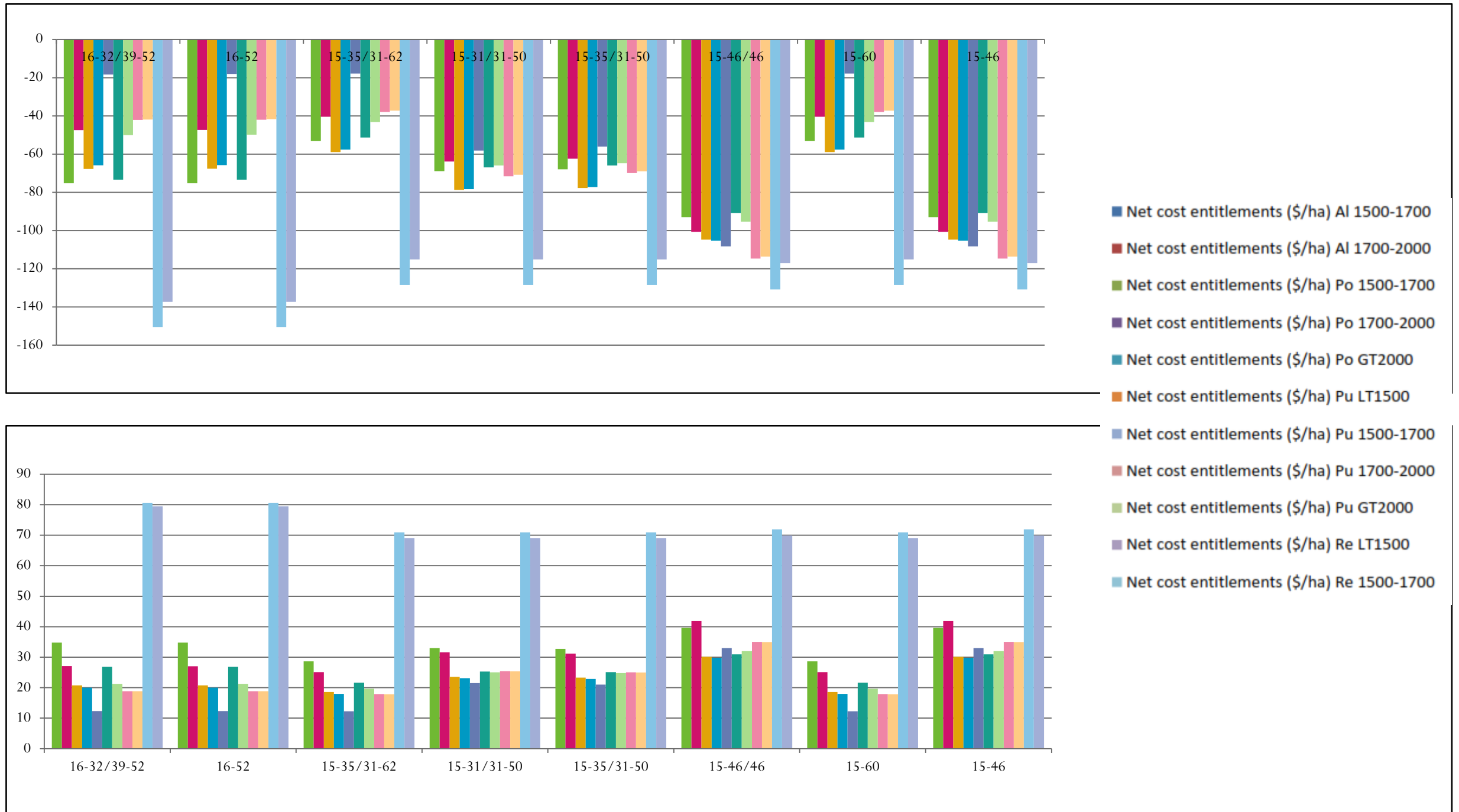


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Impact of allocation on profit

Impacts on sheep and beef farms

Amount of N sold

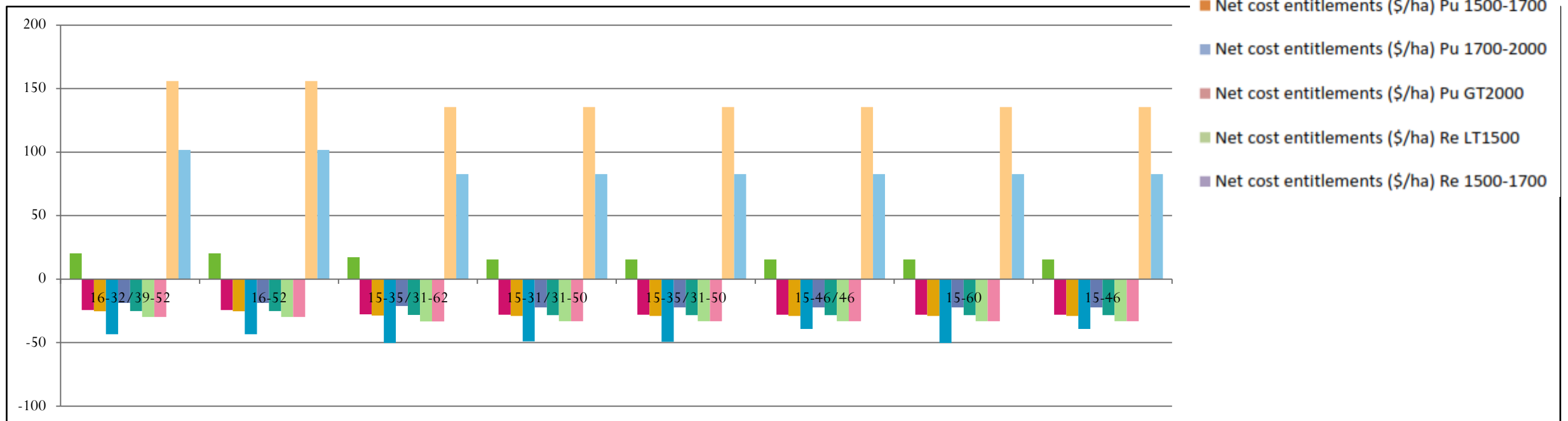
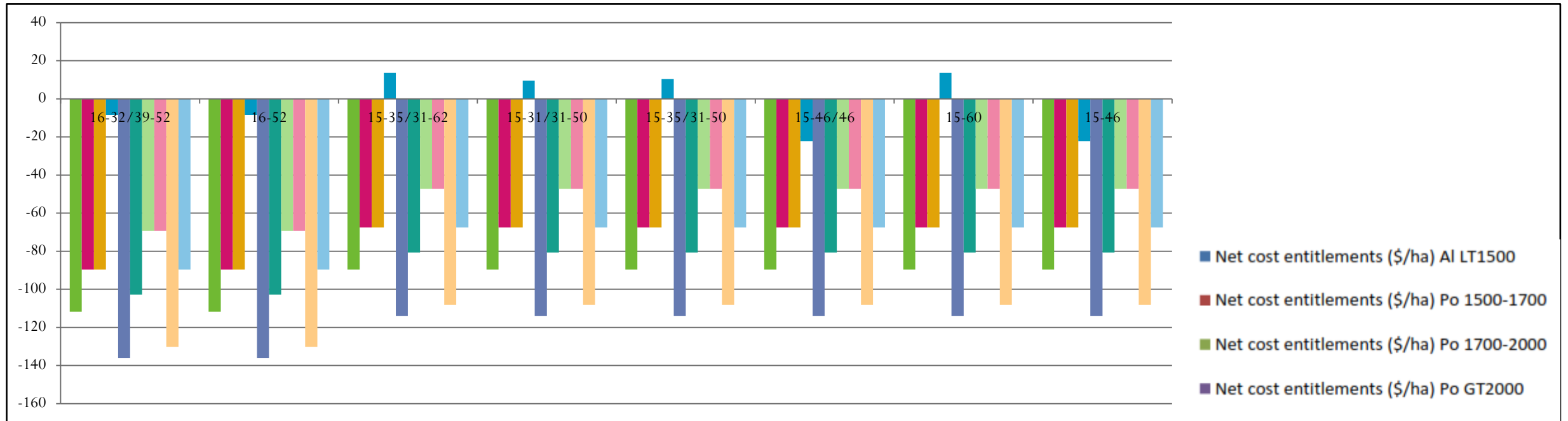


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Impact of allocation on profit

Impacts on sheep and dairy farms

Amount of N bought/sold

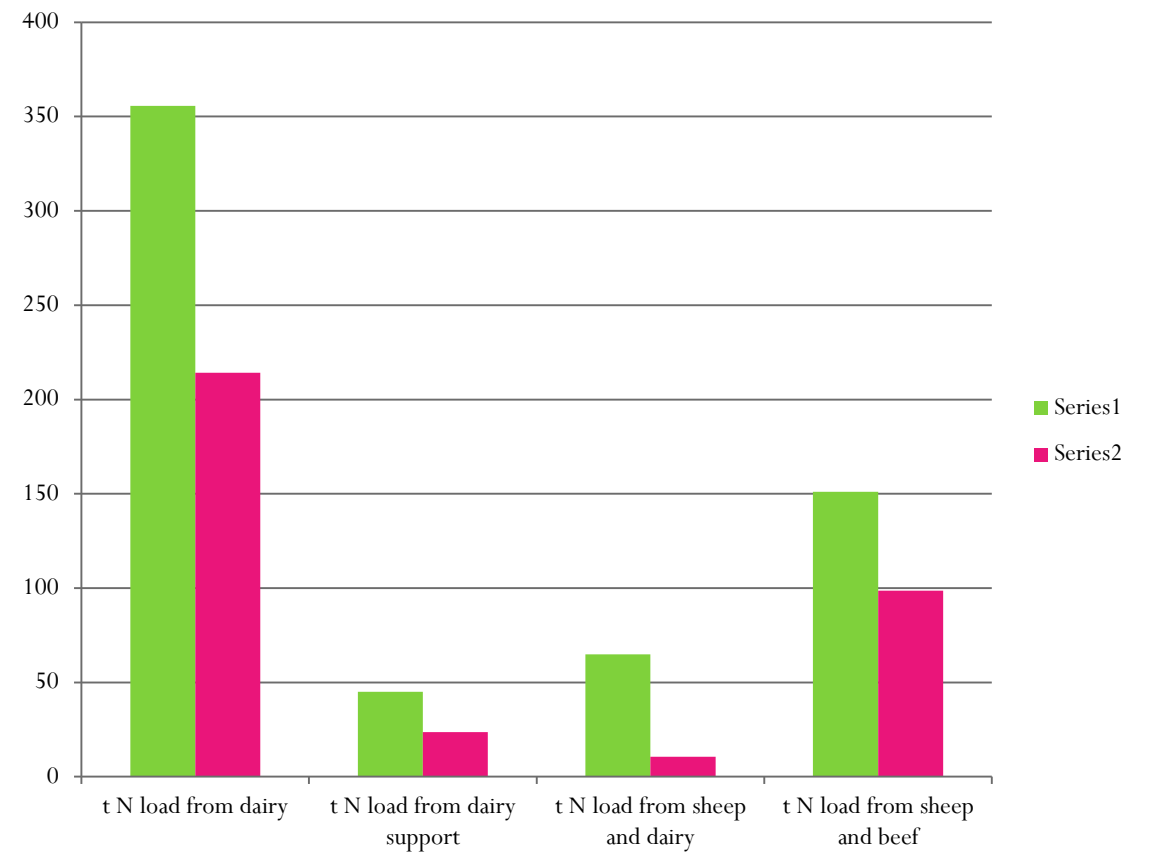
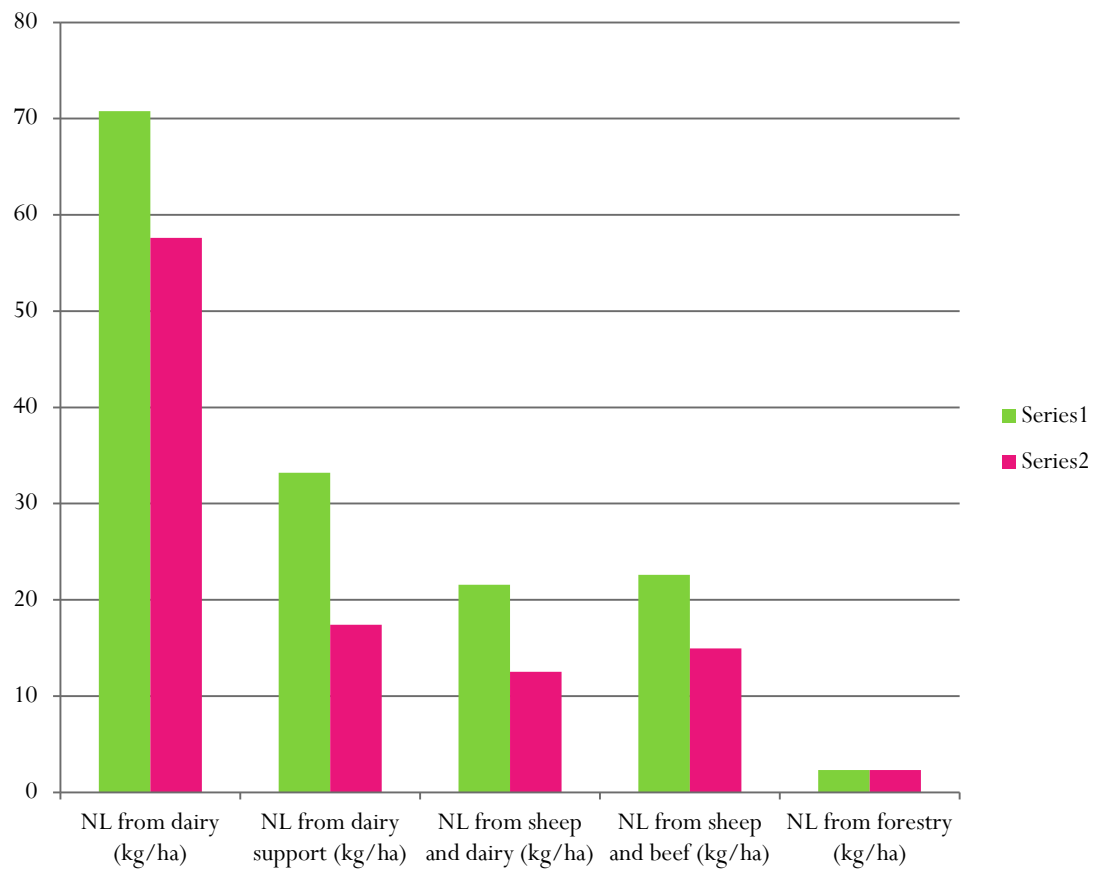


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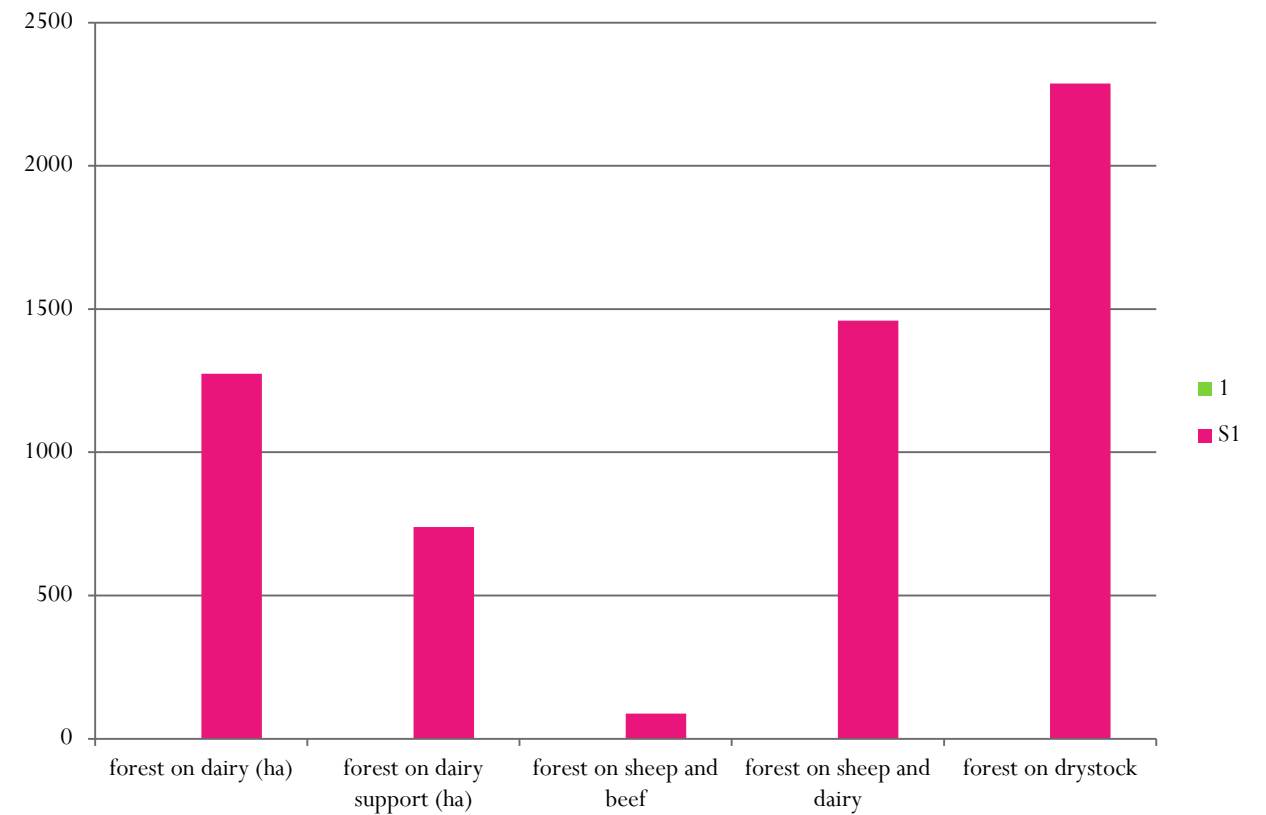
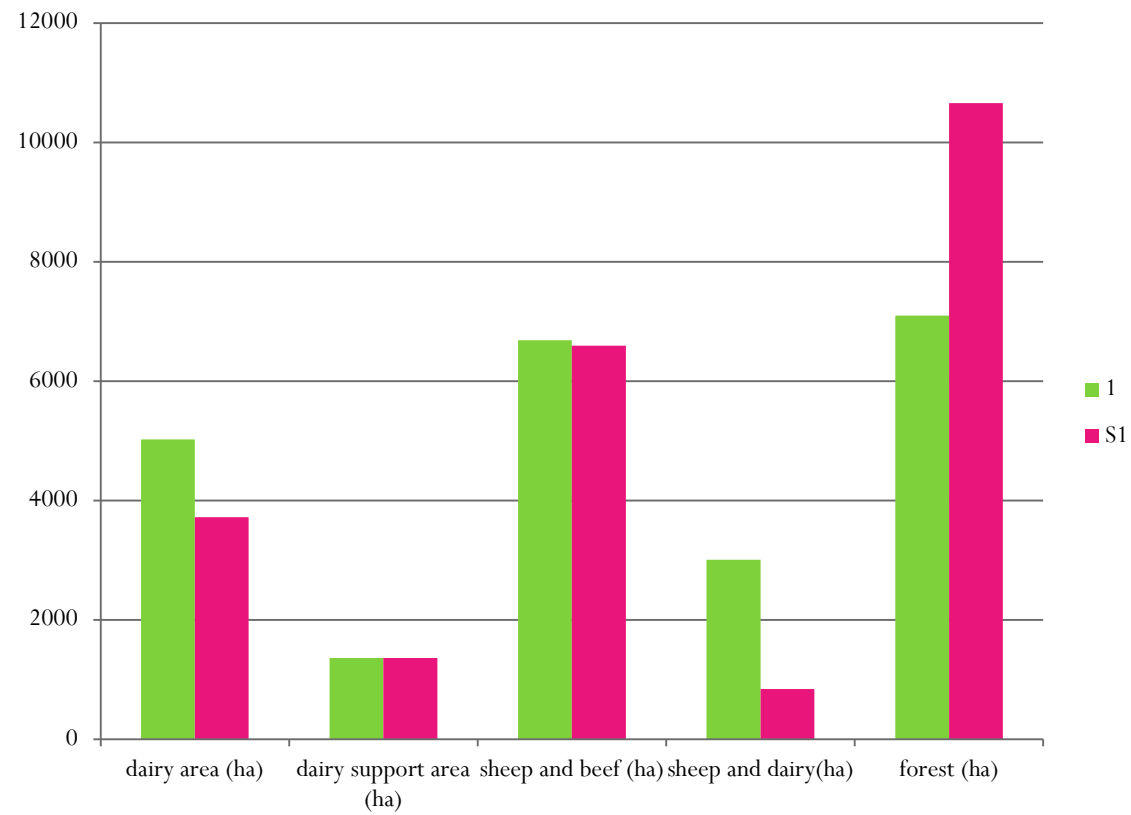
Impact of allocation on profit

Effects of area

Back to averages for a second.

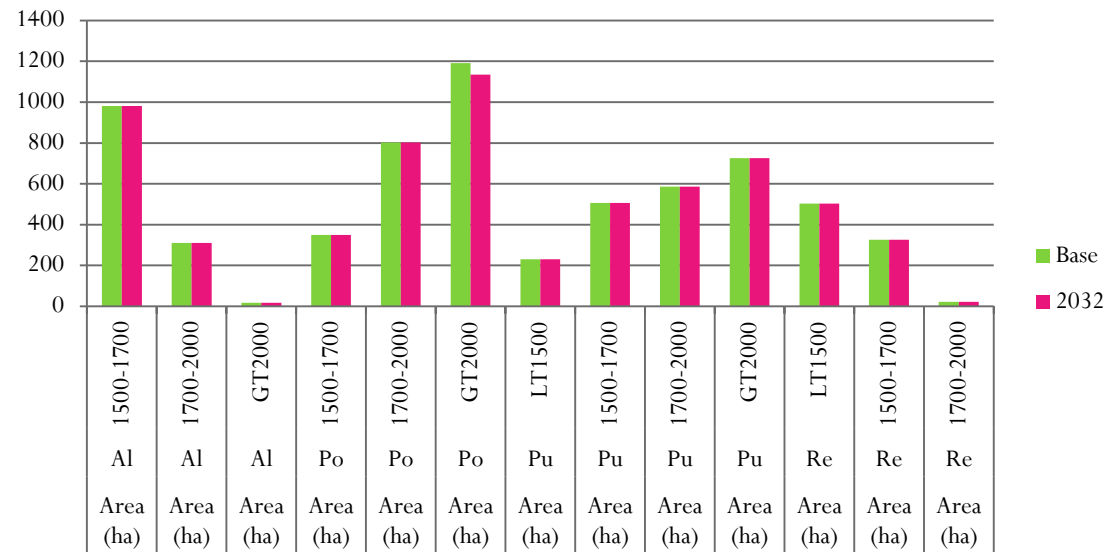


Afforestation

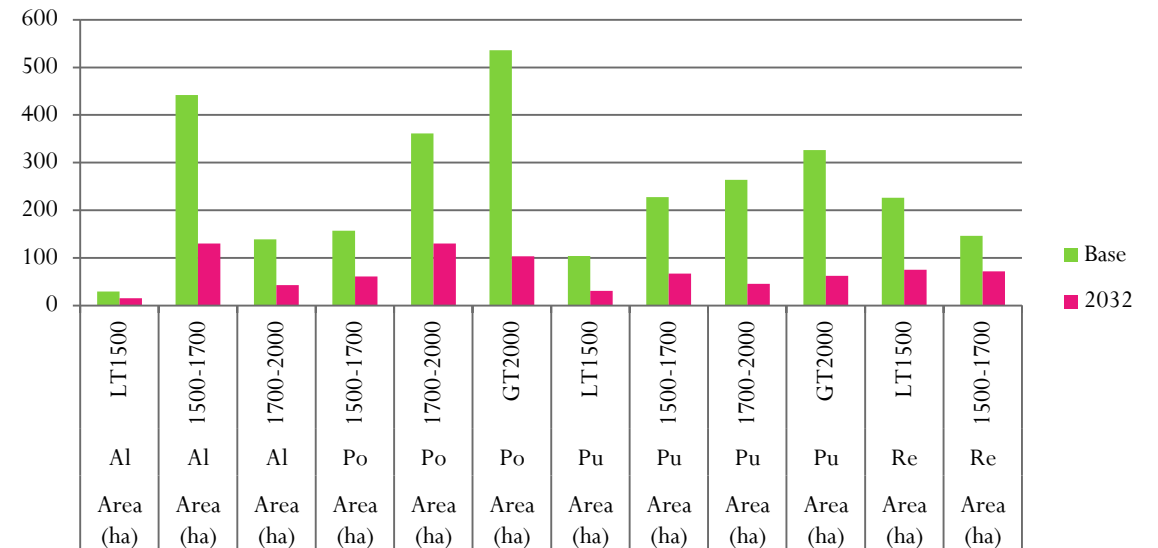


Change in area

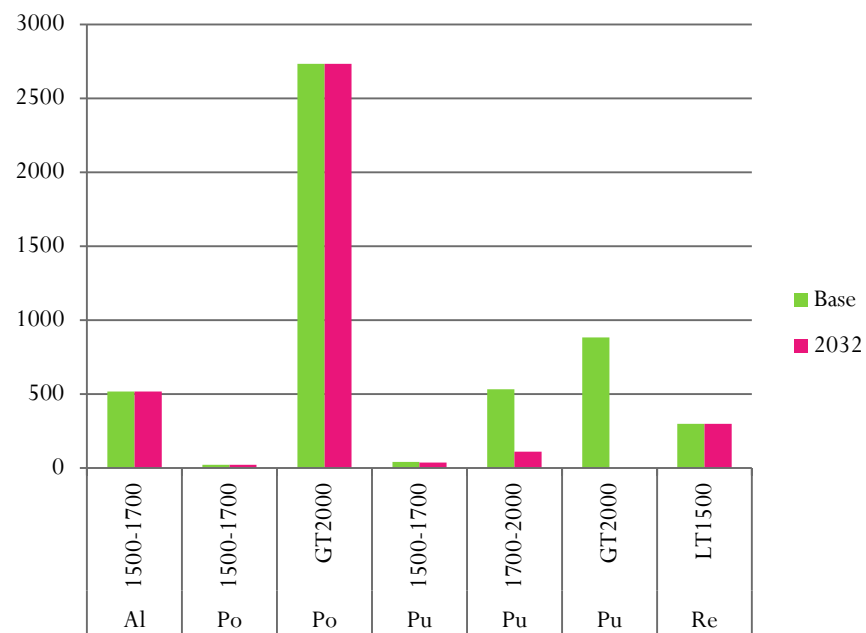
Sheep and beef



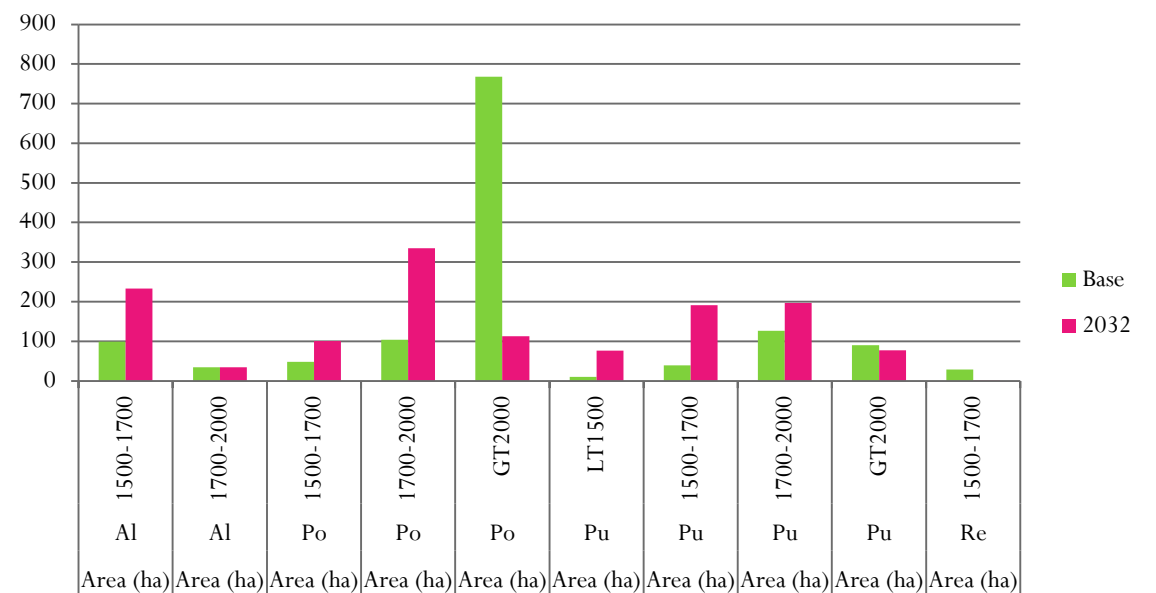
Sheep and dairy



Dairy

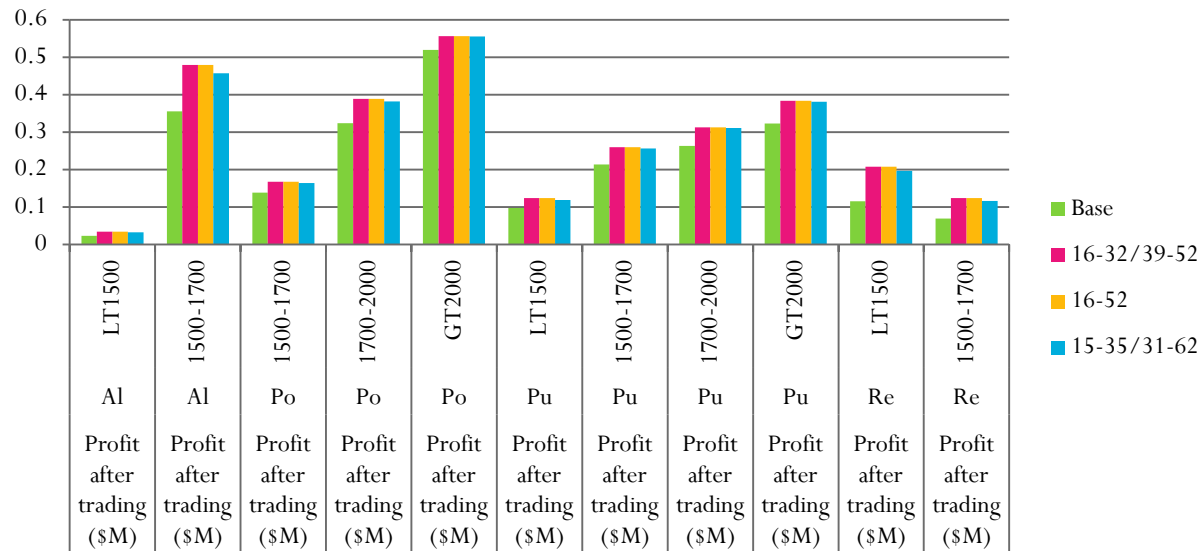


Dairy support

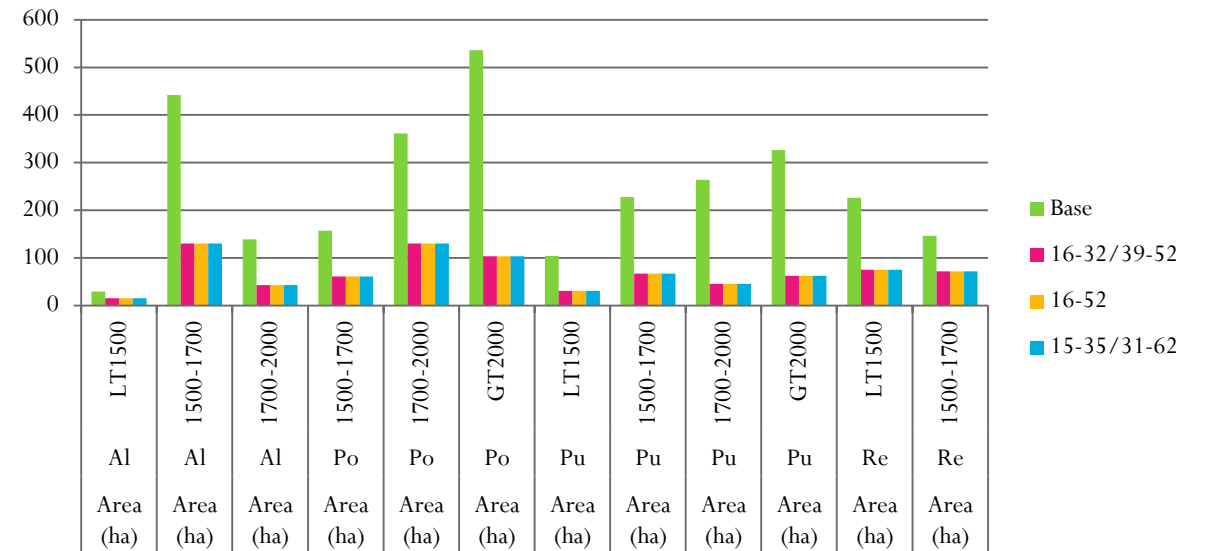


Change in total profit

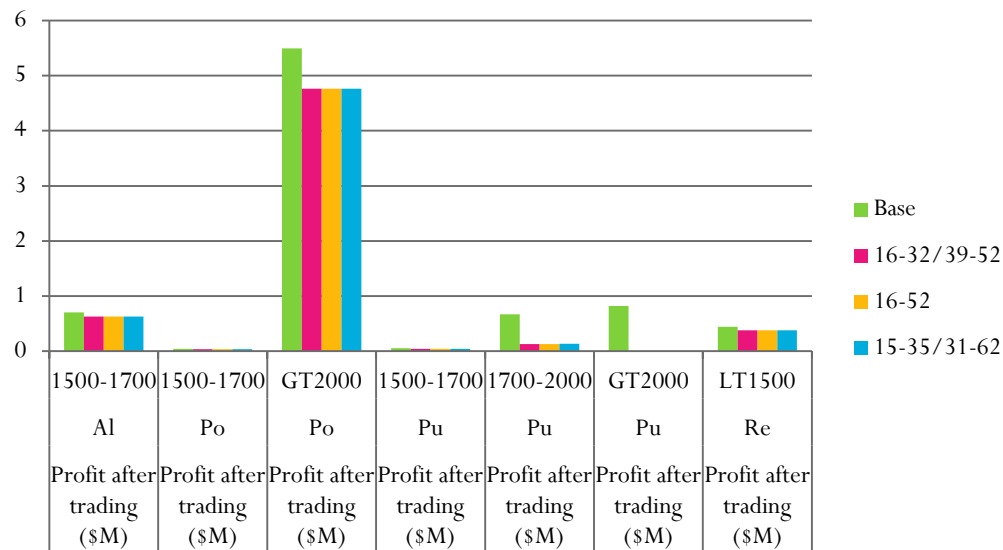
Sheep and beef



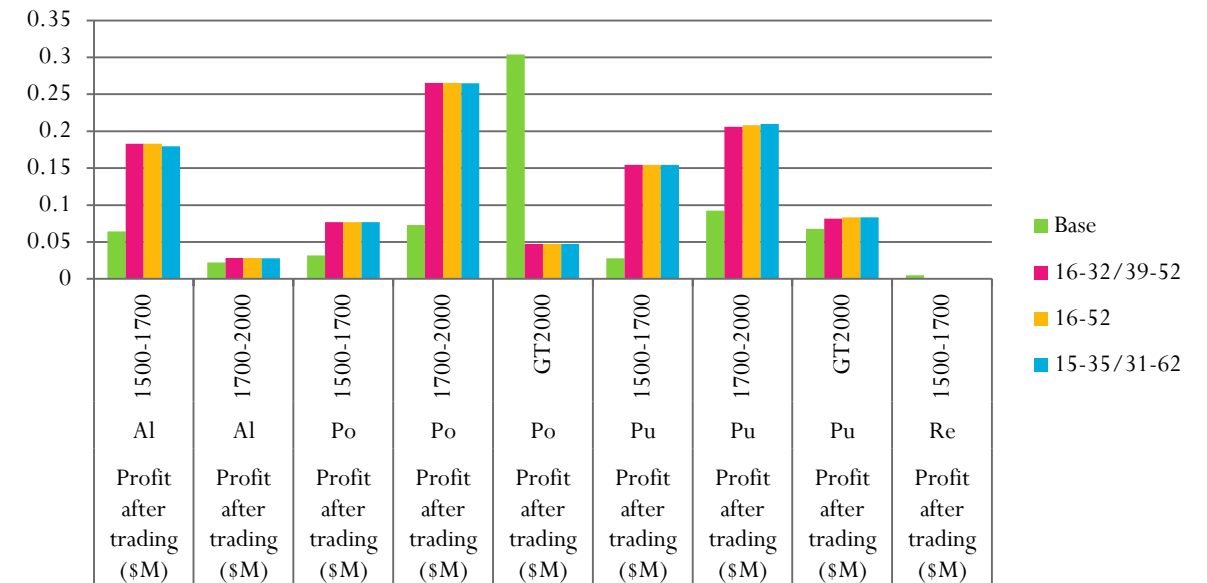
Sheep and dairy



Dairy

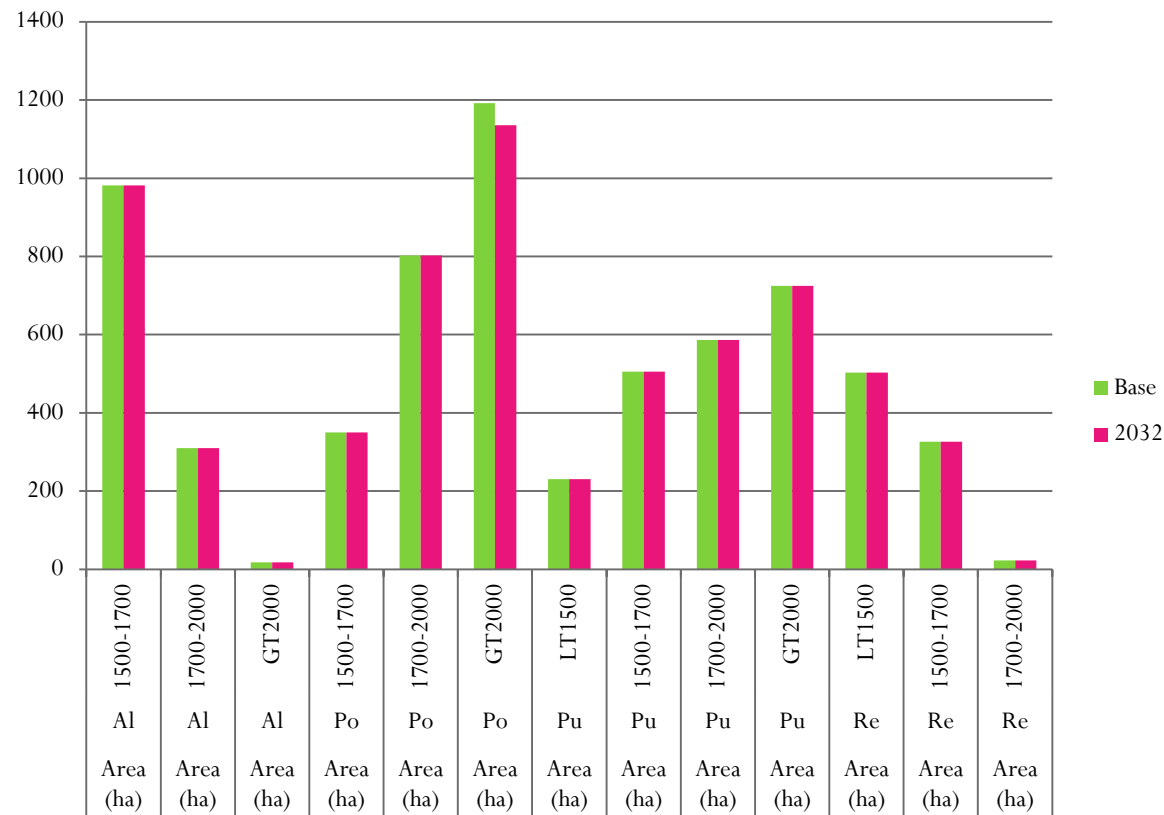


Dairy support

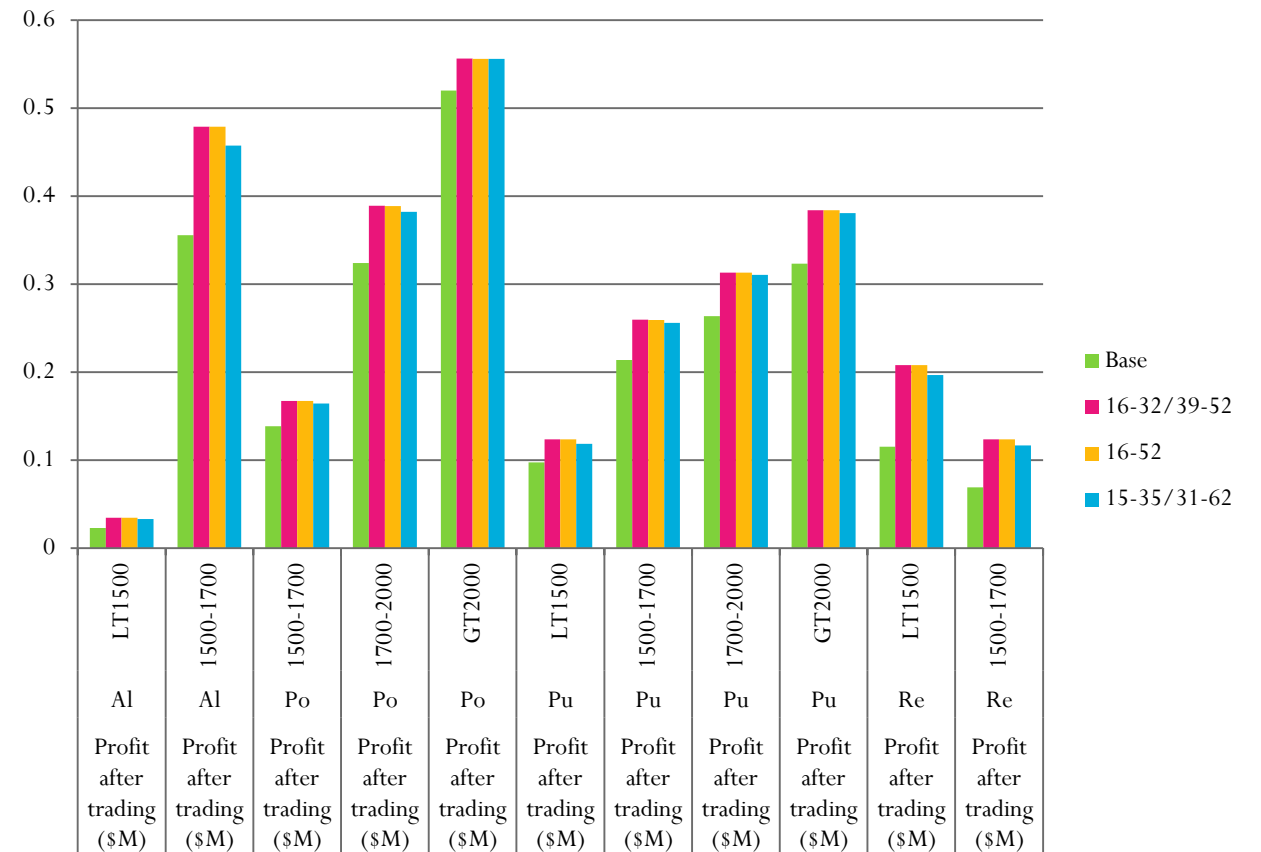


Sheep and beef

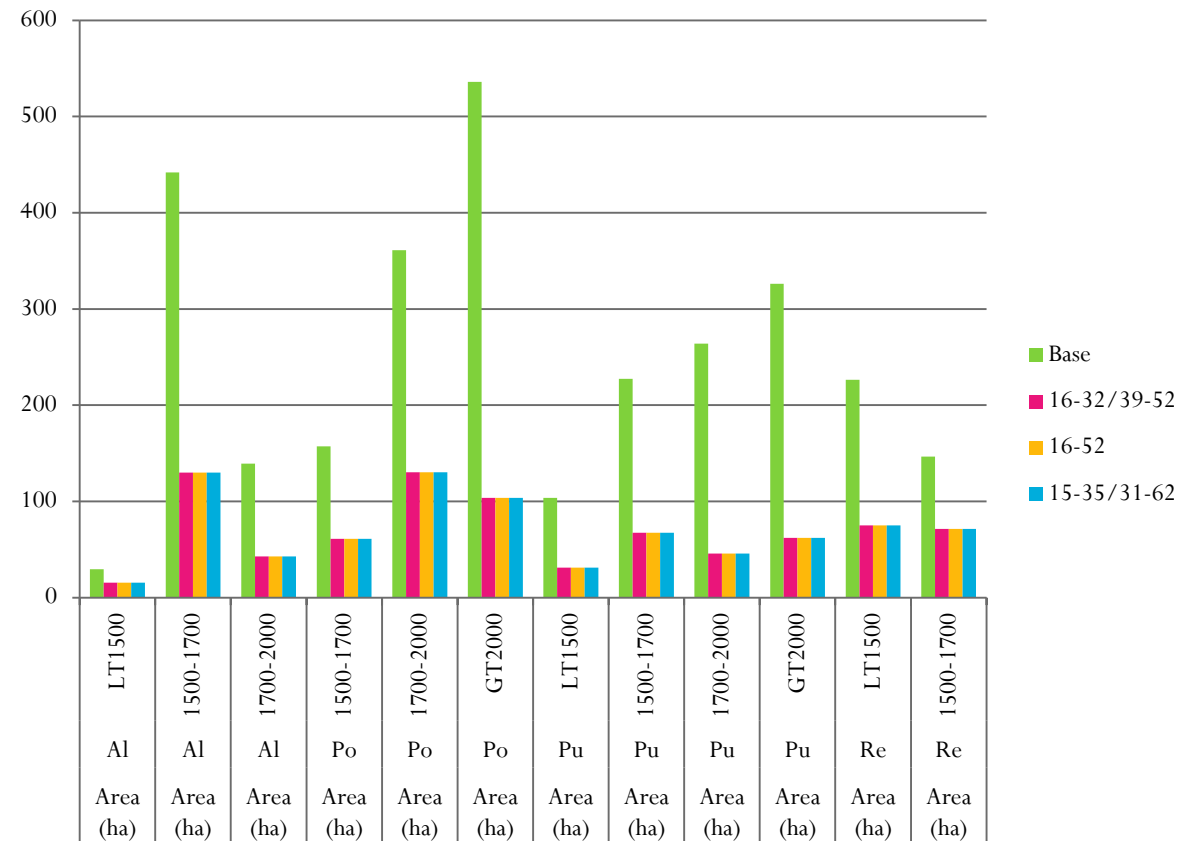
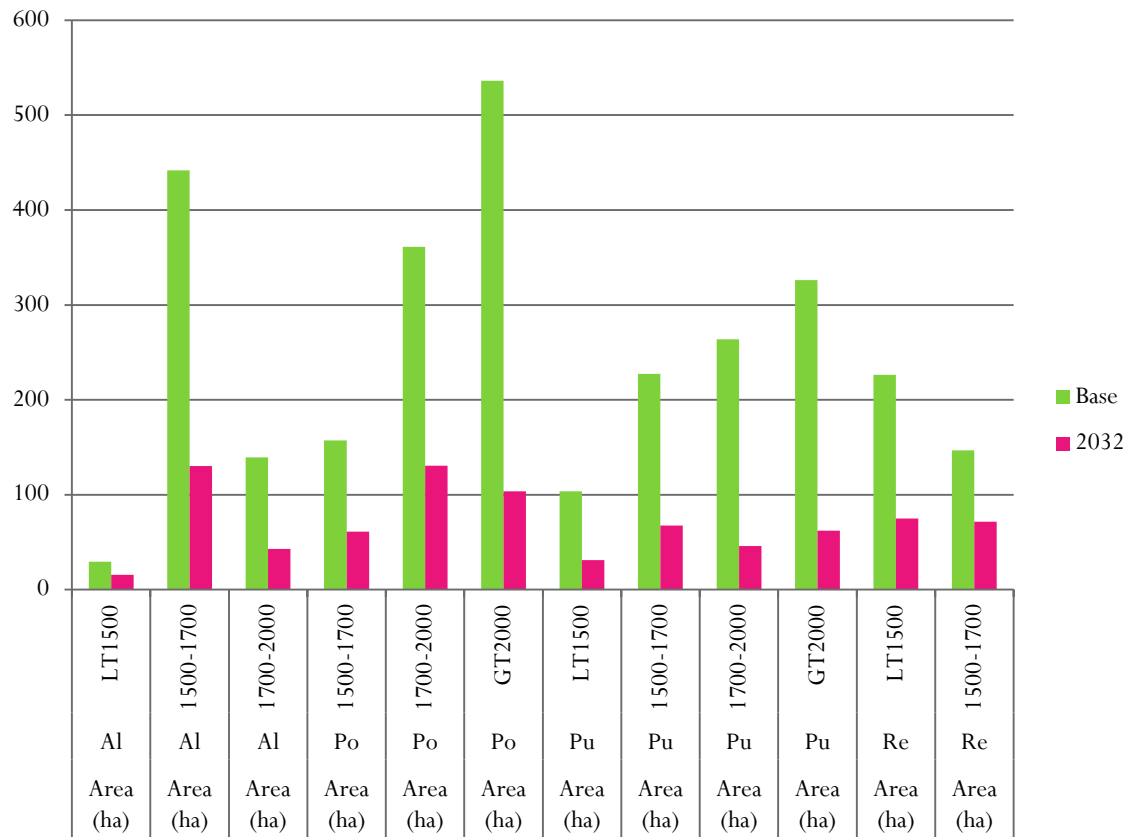
Change in area



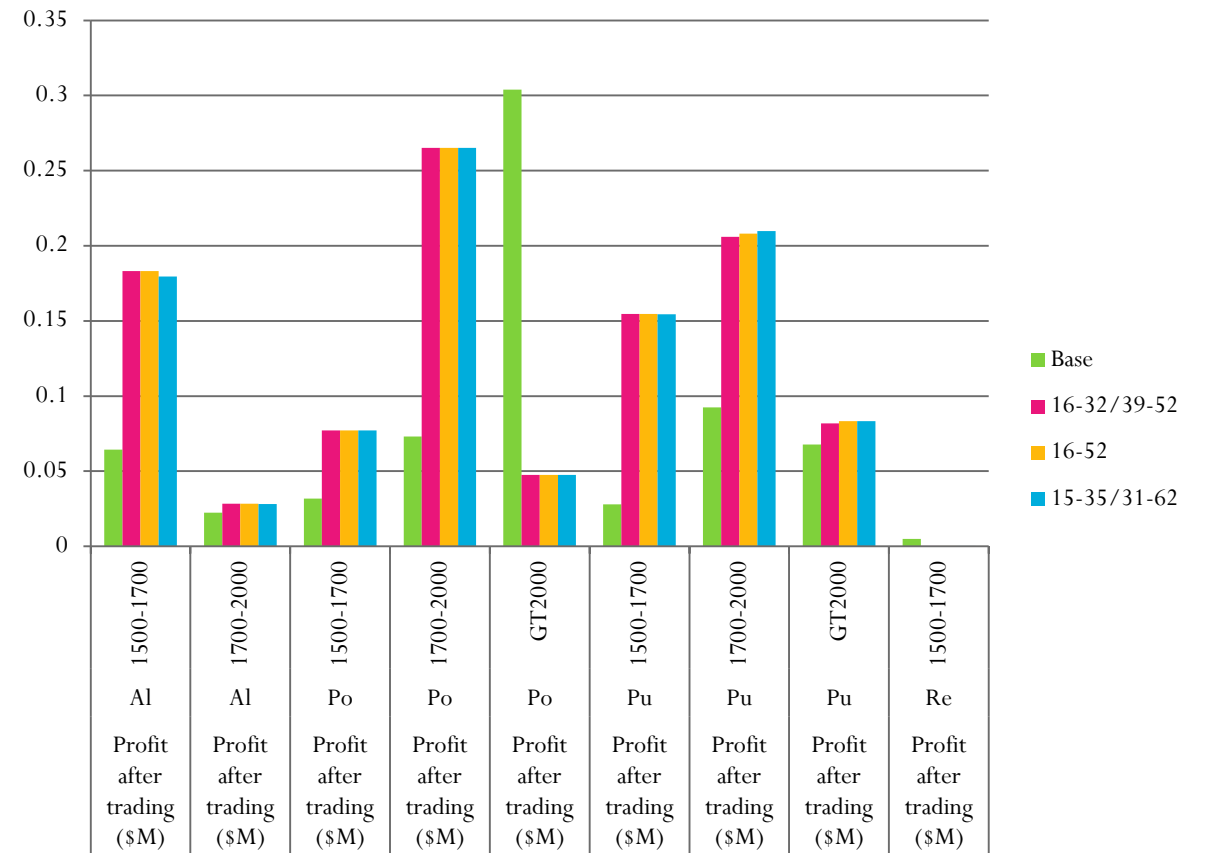
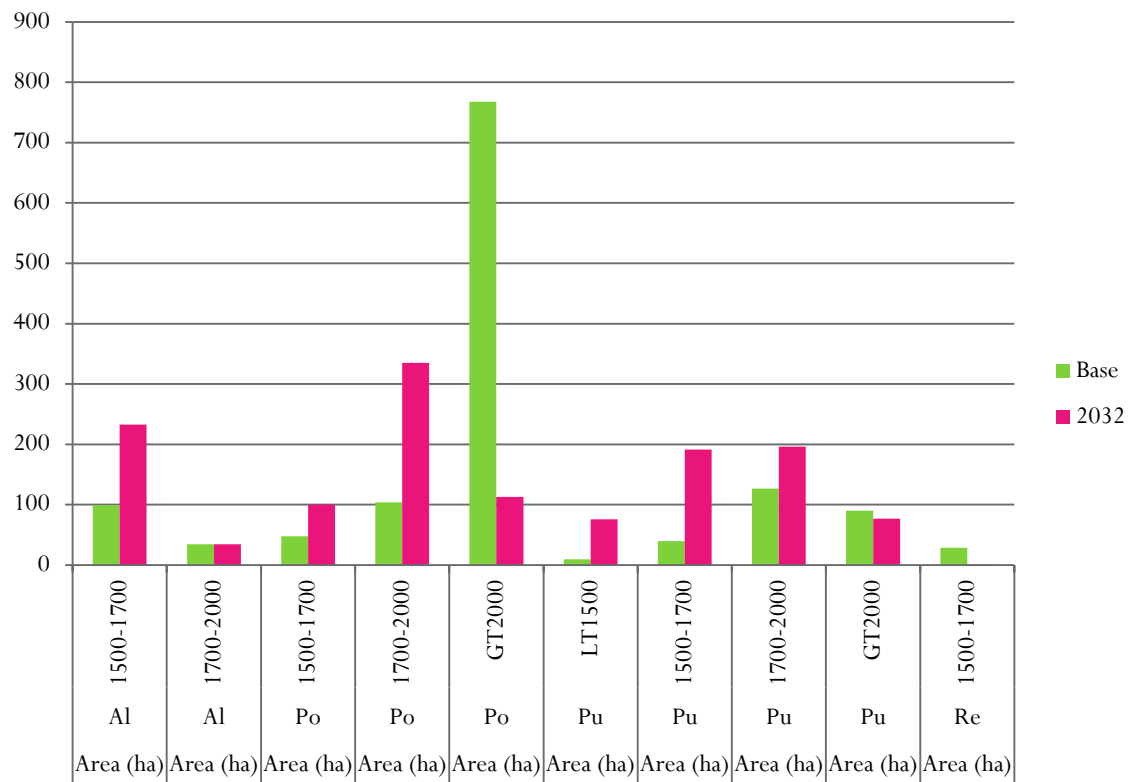
Change in total profit after trading



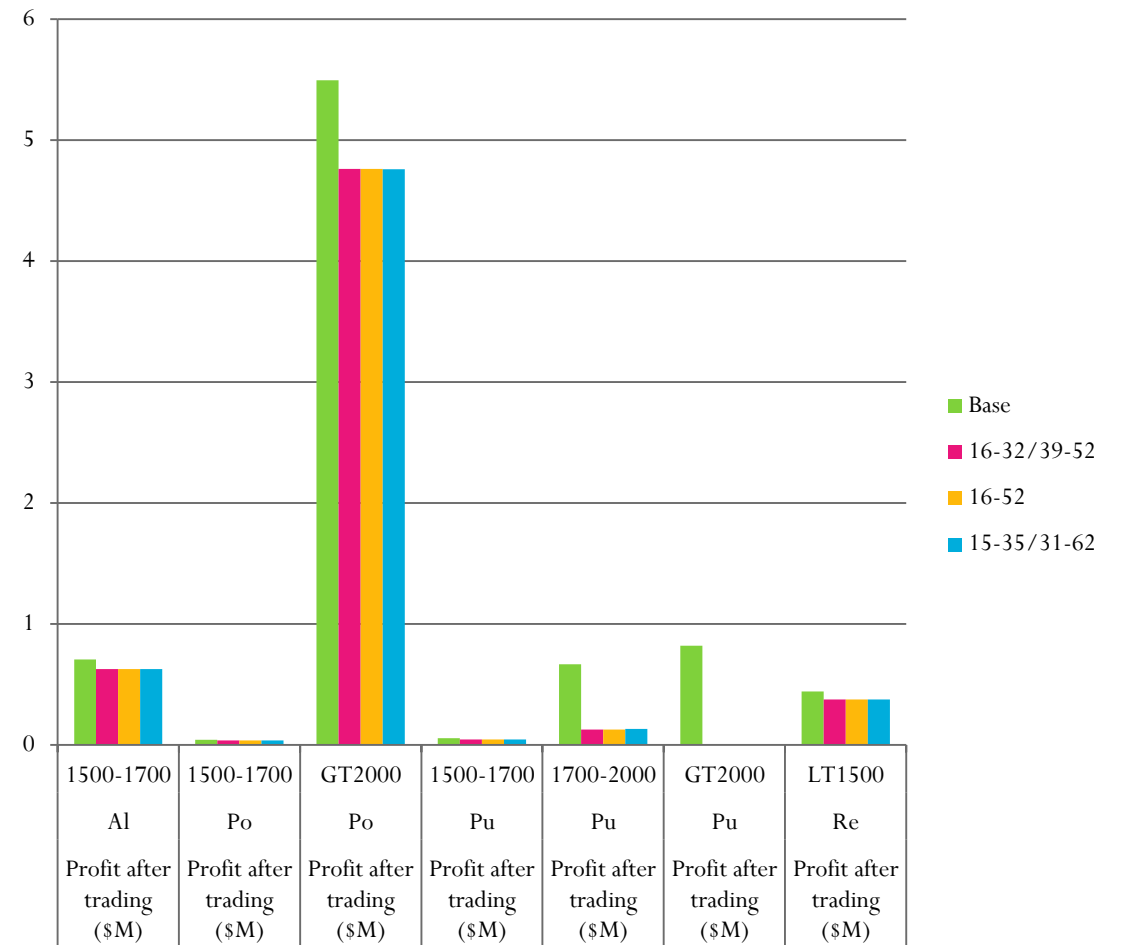
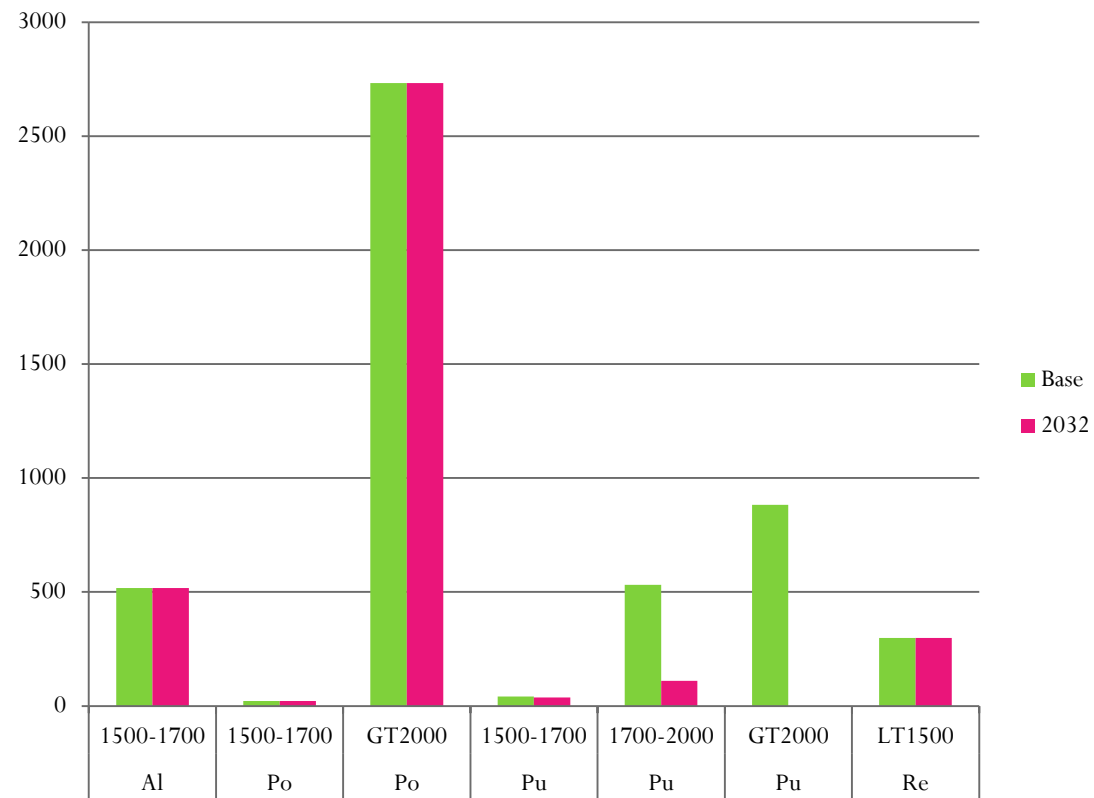
Sheep and dairy



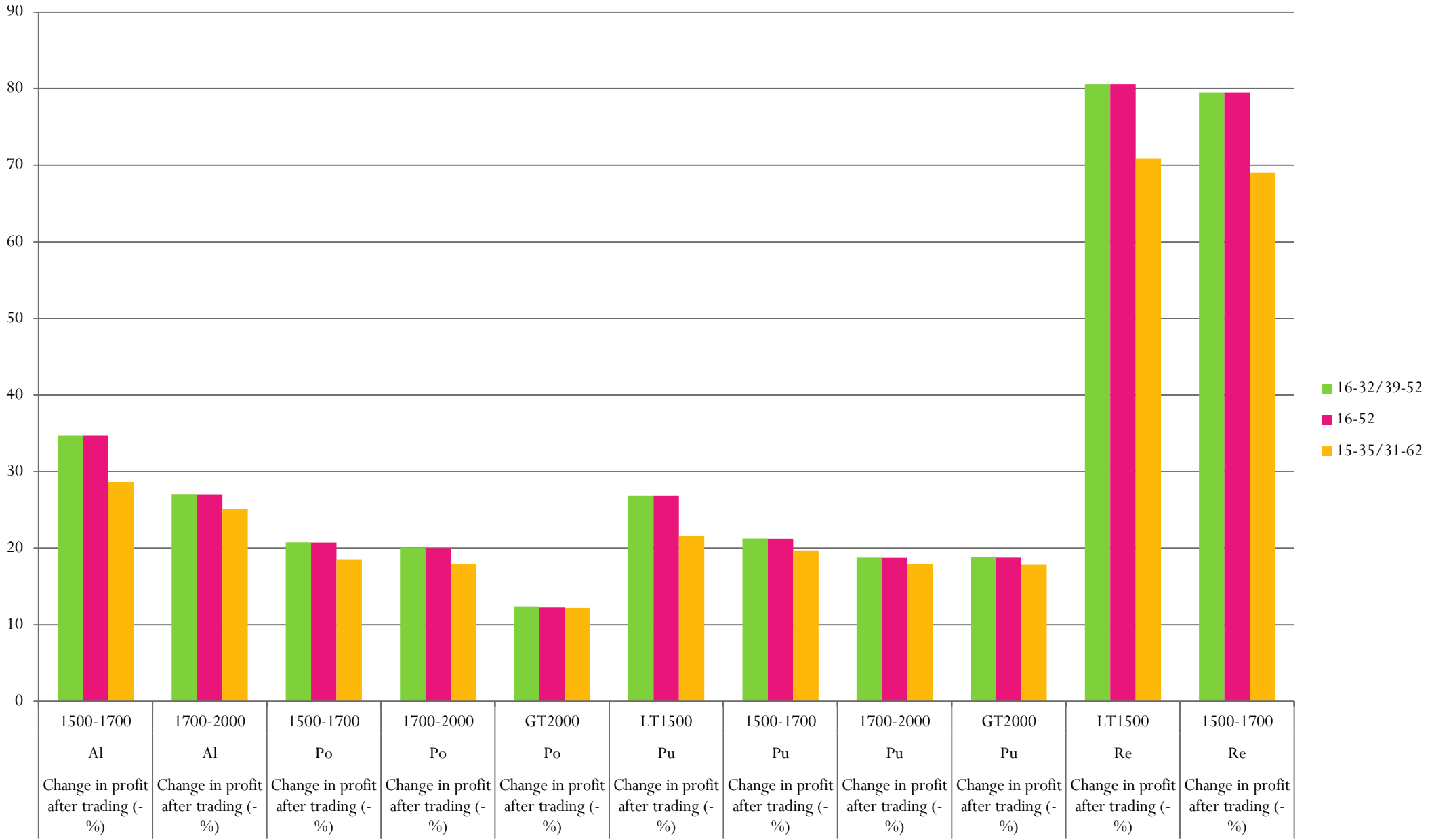
Dairy support



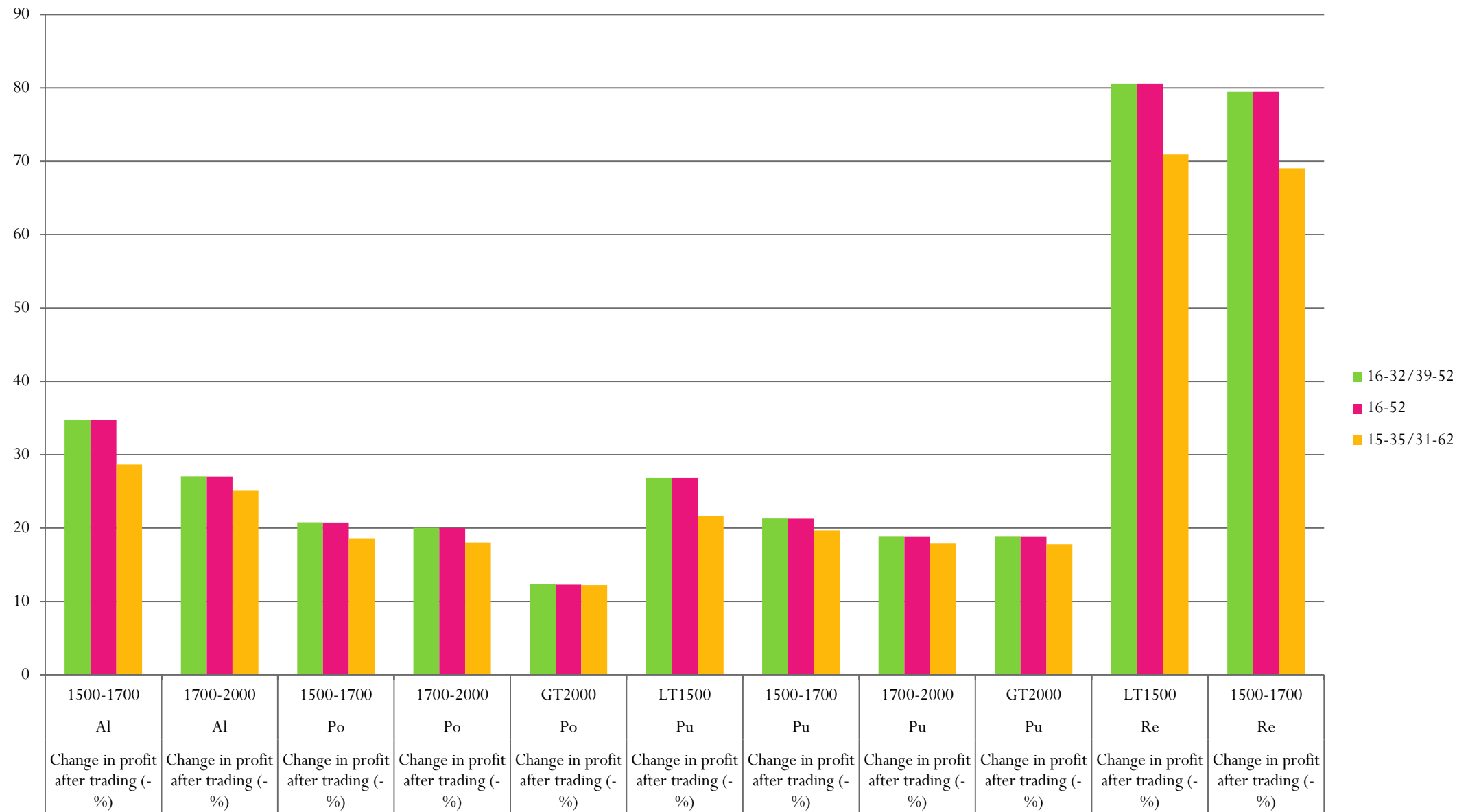
Dairy



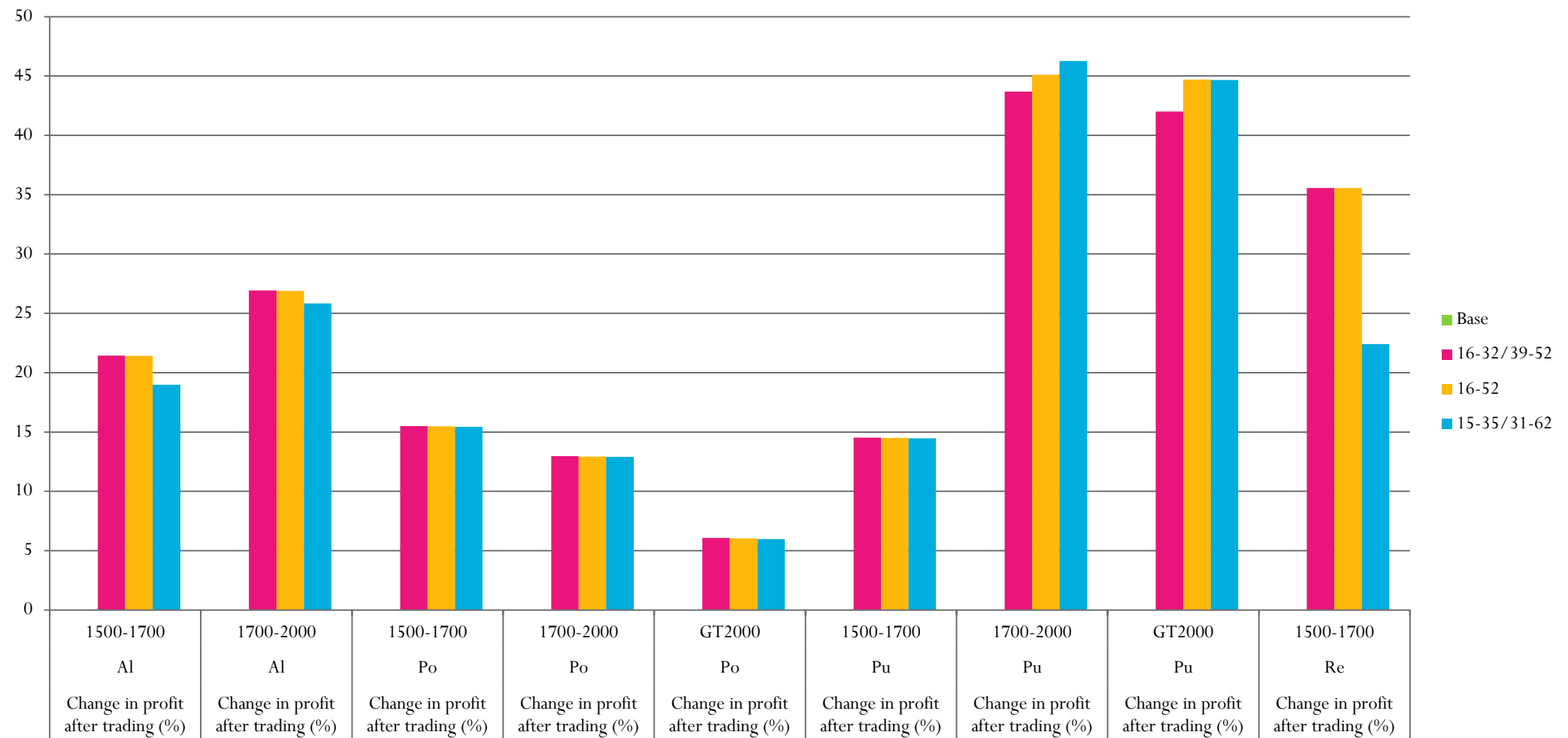
Sheep and beef



Sheep and dairy



Dairy support



Dairy

