Costs of forage production in disadvantaged mountain areas

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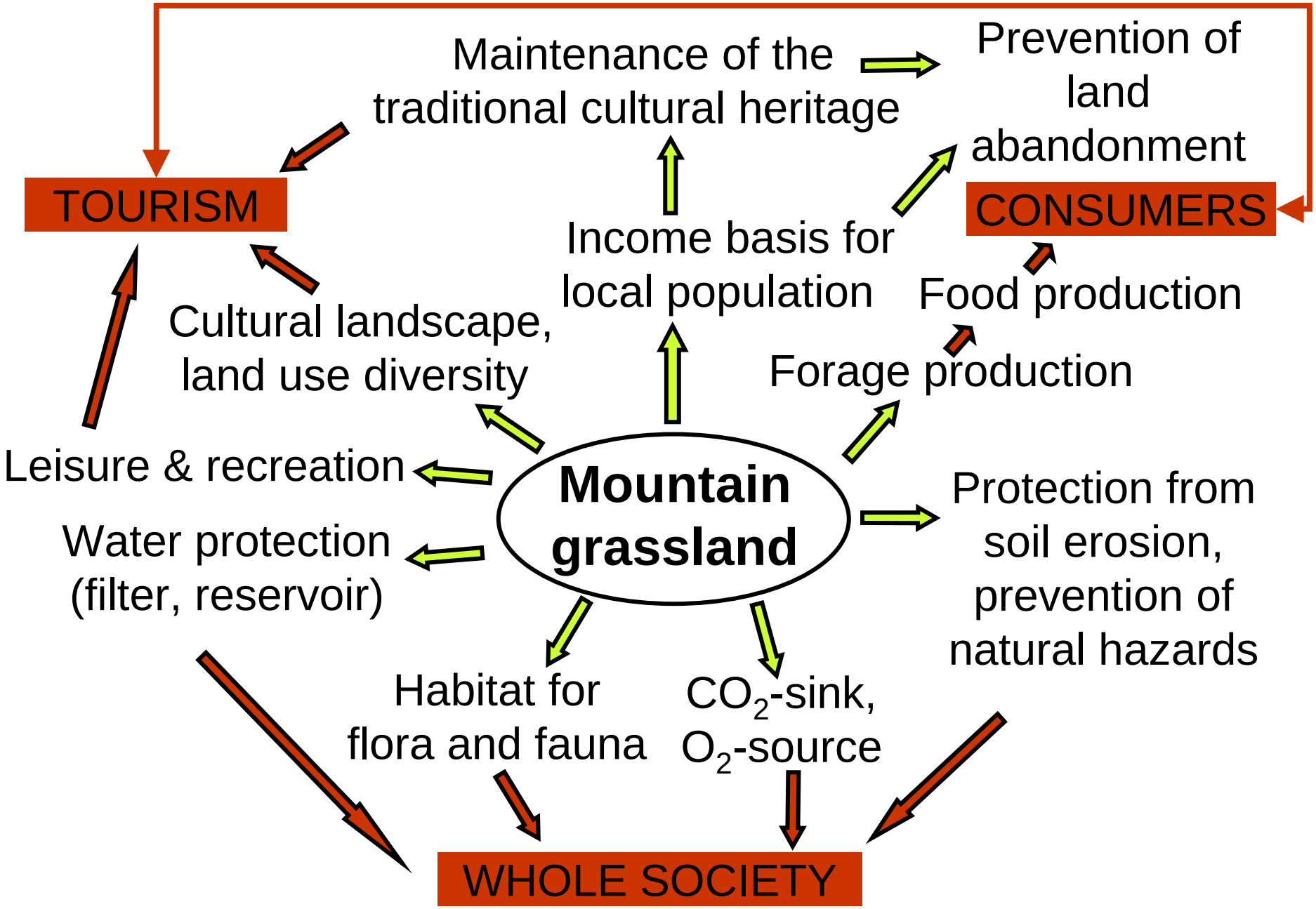
Introduction

- Mountain grassland provides numerous ecosystem services
- Its conservation is best achieved through sustainable site-specific agricultural use
- South Tyrol (N-Italy): mountain region (more than 90% of the area above 800 m a.s.l.), 219.000 ha grassland (about one third of the area)
- Extensive grassland is likely to be found where climate and topography are unfavourable (Niedrist *et al.* 2009)


Maintenance of the traditional cultural heritage
Prevention of land abandonment
TOURISM
CONSUMERS
Income basis for local population
Food production
Cultural landscape, land use diversity
Forage production
Leisure & recreation
Mountain grassland
Protection from soil erosion, prevention of natural hazards
Water protection (filter, reservoir)
Habitat for flora and fauna
CO_2-sink, O_2-source
WHOLE SOCIETY

Aims

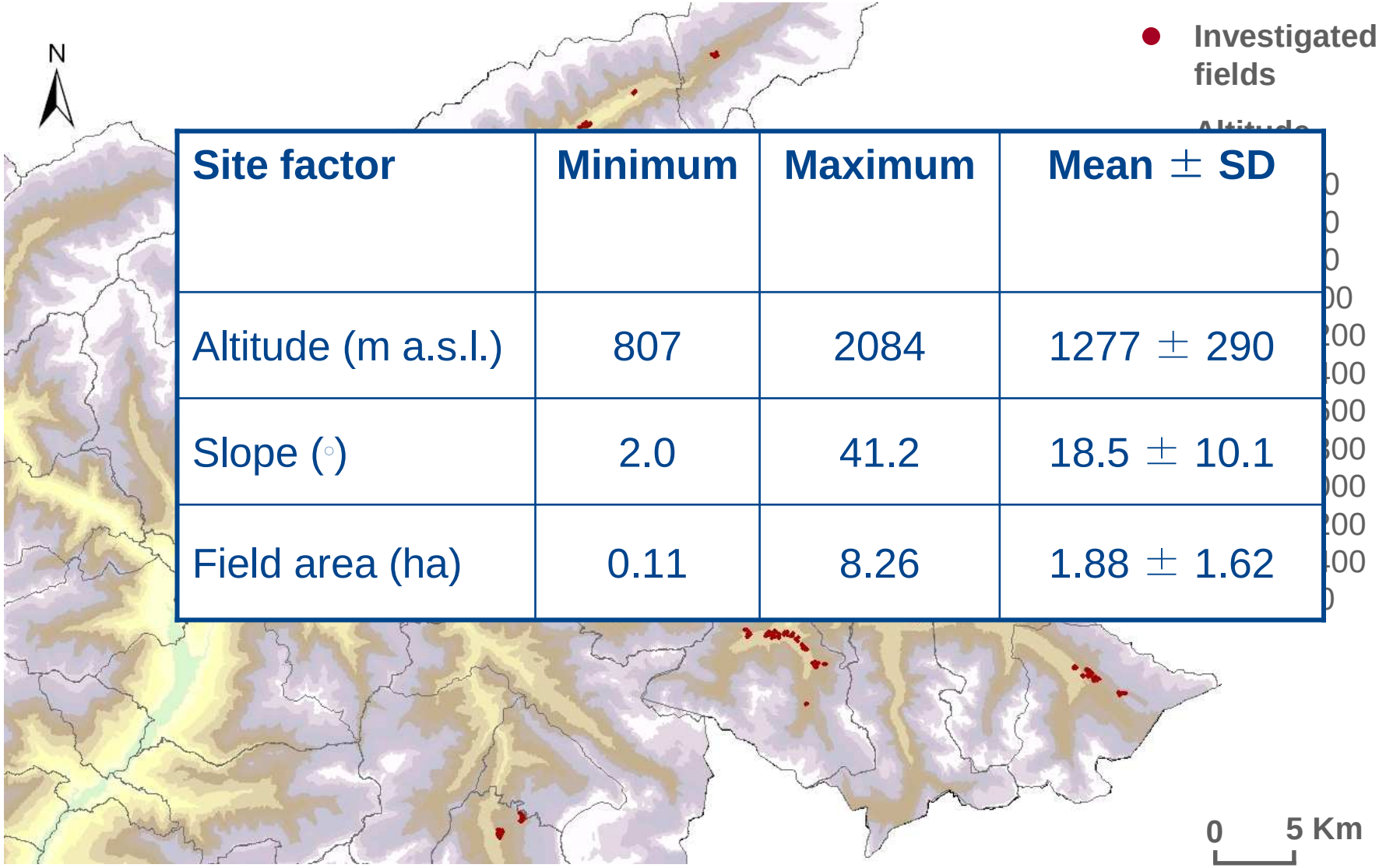
The investigation of the of the forage production costs in South Tyrol aims at:

- identifying the main factors affecting the production costs and quantifying, as far as possible, these relationships
- providing reliable, local data as a rational decisions basis for public payments
- providing a reliable basis for the consultancy at farm scale

Working group

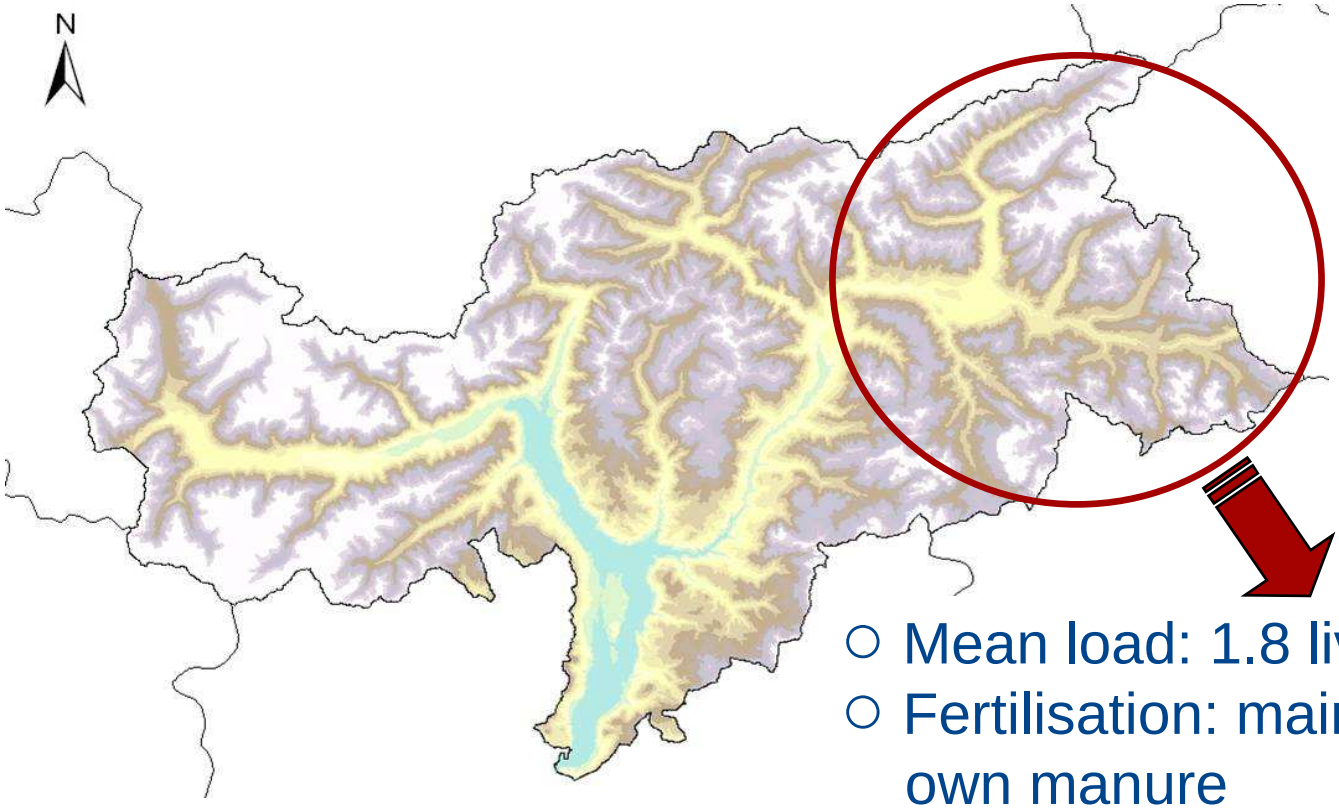
19 farmers from the Puster Valley

Investigated fields (n=100)



Site factor	Minimum	Maximum	Mean ± SD
Altitude (m a.s.l.)	807	2084	1277 ± 290
Slope (°)	2.0	41.2	18.5 ± 10.1
Field area (ha)	0.11	8.26	1.88 ± 1.62

Facts about the investigated farms

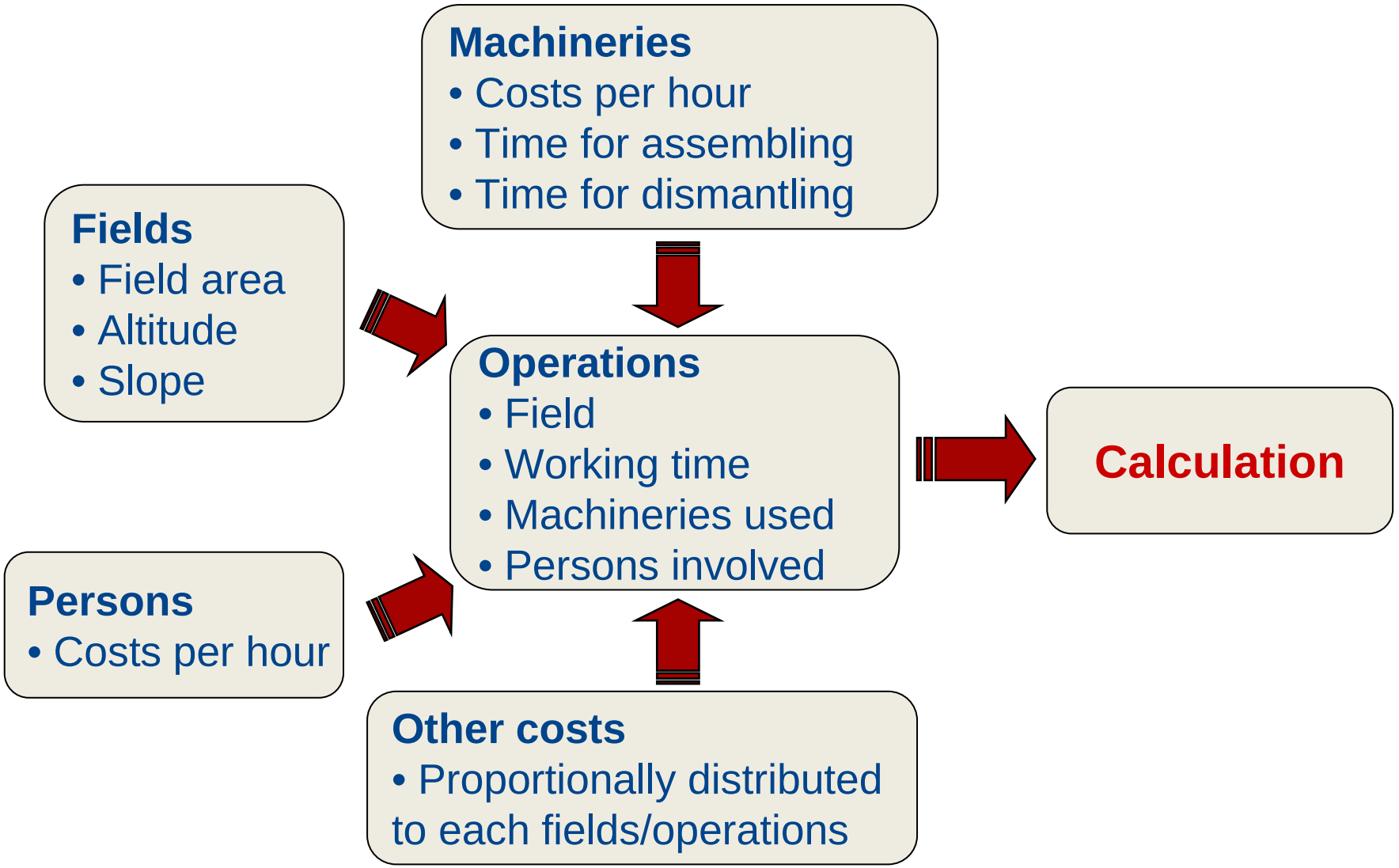


- Mean load: 1.8 livestock units ha^{-1}
- Fertilisation: mainly with farm's own manure
- Forage conservation: ¾ hay, ¼ silage
- Gross DM-yields: 5.9 to 9.4 Mg ha^{-1}

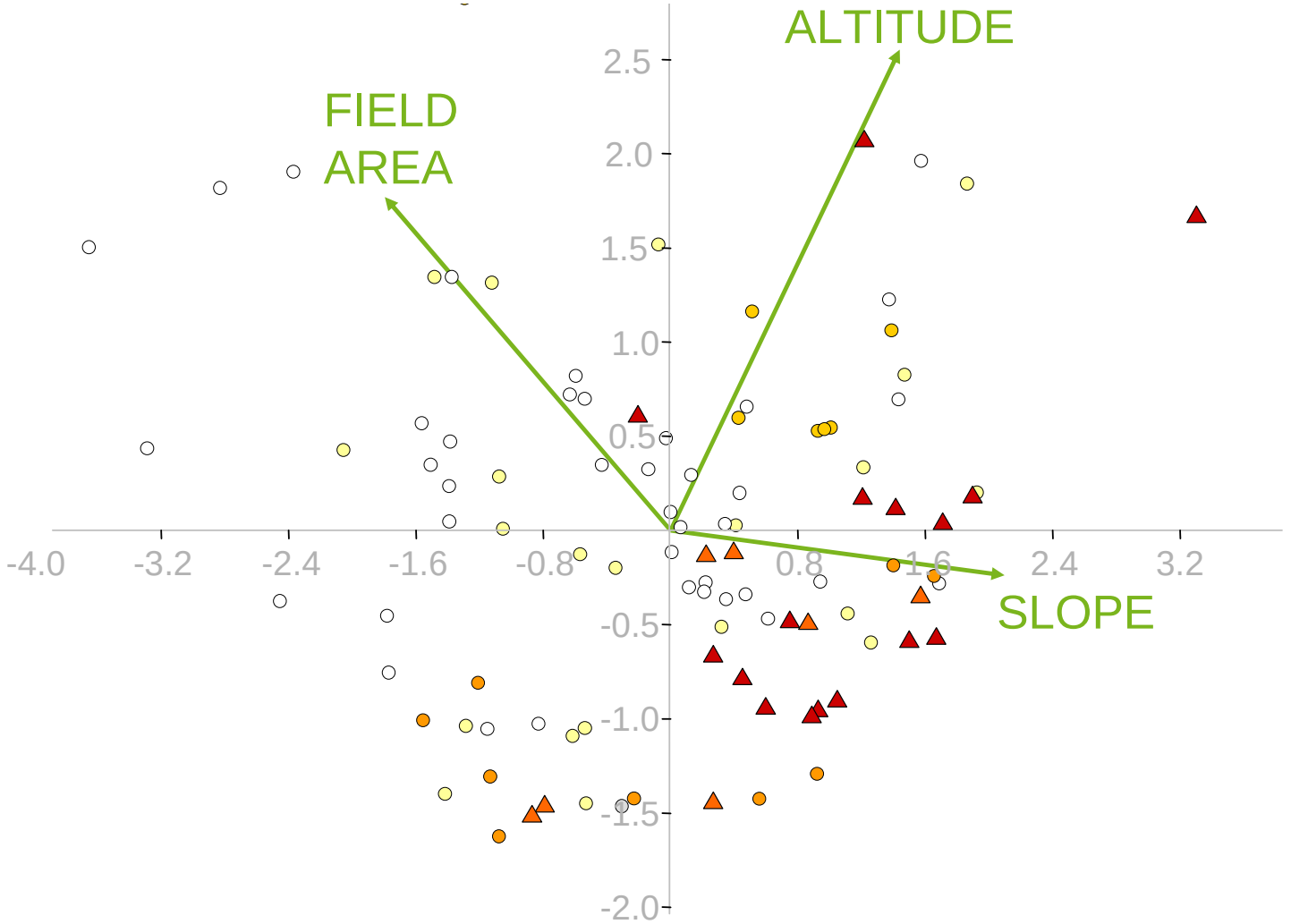
Calculation of costs of machinery and labour

- Machinery: buying price, service life and working hours according to data provided by the farmers, calculation according to Gazzarin (2011).
- Labour: opportunity cost approach according to AAEA (2000). Reference to the wages of the collective agreement for agriculture according to agricultural training; minimum wage also for children less than 16 and elderly people more than 65 year old.

Data structure



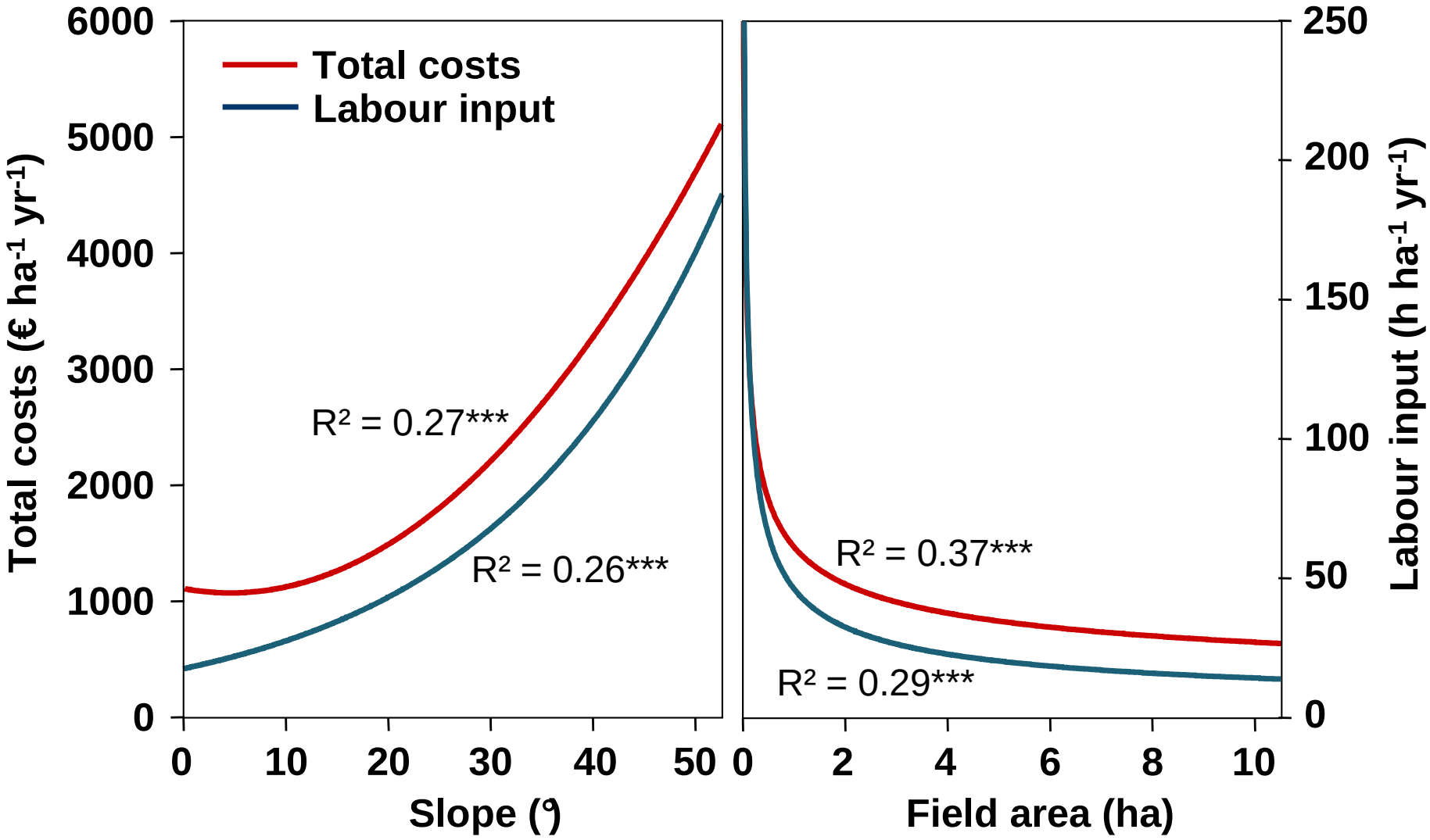
Ordination of unitary costs (PCA)



Unitary costs (€ ha^{-1} yr^{-1})

- <1000
- 1000-1500
- 1500-2000
- 2000-2500
- >2500

Effect of slope and field area on production costs and labour input



Conclusions

- These results provide evidence for increasing production costs and labour input as field steepness increases and the field size decreases.
- These fields in particular are most likely to be managed extensively and in turn to provide non-marketable, environmental and social ecosystem services.
- The effect of altitude may become evident if costs per forage weight unit and not per area unit would be taken into consideration.
- As farmers are rational economic agents, public payments for these services are therefore crucial for ensuring them in the long term.


Thank you for your attention