Developing win-win outcomes across a range of grassland-based livestock farming systems

Preliminary results of collective expertise ‘Roles, impacts and services provided by livestock in Europe’

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Why to look for win-win outcomes in grassland-based LFS?

- Livestock farming systems undeniably contribute to improving human condition (proteins, income, social roles), but are regarded as a major cause of world’s most pressing environmental problems.

- Grassland-based systems limit competition with human food supply and provide products with + image and high nutritional Q.

- Grassland-based systems provide a large number of regulating and cultural services, and are more likely to lead to some win-win outcomes.
Where are European grassland-based territories?

Thresholds based on expert view, so that outcomes also match the ‘services provided by livestock’ map proposed for France by Ryschawy et al. (2015)
Grassland-based territories across Europe

Map by Jonathan Hercule, INRA DEPE, Paris
Four territories along an animal density gradient
How do we represent territories?
Ecosystems
Social concern
These four contrasted territories provide ≠ levels of goods and services use various grasslands and ≠ input levels benefit from ES and cope with dis-services meet more or less consumer expectations

In each territory, trade-offs exist between economic, environmental and social dimensions

Both technical and organizational innovations can shift trade-offs towards improved productive, ecological and/or social performance

- Redesign of systems
- Landscape management
- Collective organization
Switching from external inputs to ecosystem services

- A new equilibrium between inputs and productive objectives; increasing forage self-sufficiency in the RAD network (data 2014 from Dieulot 2015)

- $91\%$ pesticides (in €)
- $92\%$ fertilizers (in €)
- $+63\%$ grasslands in UAA

↓ feed costs
- $50\%$ €/1000 l.

Ecosystem services & biodiv.

Moderate ↓ in productivity
- $22\%$ l./cow, $-20\%$ LU/ha

↑ Decisional autonomy
- Not less work but more interesting work!

28k€ vs. 16k€
Organizing production cycle to better use rangelands

- Forage self-sufficiency: 73% ➔ 93%

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19 Ewes

+18 ha fertilized grasslands (4t DM/ha)

Conserved forage + concentrate

Green grass on fertilized & native grassland

Native rangelands

Regrowths on fertilized grassland

LACTATION

MATING

Ewe-lambs

Compensatory growth

WEANING

260 ha

Native rangeland (+ hay if needed)

Green grass on fertilized & native grassland

Native rangeland with experienced peers

Regrowths on native rangelands

Gross margin: +40%, Stable GES emissions

Energy consumption: -29% (Jouven et al. 2011)

Control of shrub encroachment, Preservation of species-rich grasslands
Managing landscape heterogeneity

- Increasing landscape heterogeneity shifts the production-biodiversity trade-off towards improved ecological performance

- Preserving hedgerows and other landscape features (shade to livestock, ecological corridors/shelter to wildlife)

An hedgerow network of greater aesthetic value was restored at a relatively low cost in the NL by accounting for all stakeholders view (Groot et al. 2007, 2010)

![Graph showing the relationship between ecological performance and productive performance, with points indicating shifts towards improved performance.](image-url)
Sharing knowledge and views to create win-win situations

- Teaching farmers feedback loop between biodiversity, ecosystem services and management practices using role-playing games (Lamarque et al. 2014)

  + simulating changes in ES under climatic and socio-economic scenarios

  ⇒ Sharing knowledge between peers
  ⇒ Comparing his own farm ‘ecological performance with those from neighbours
  ⇒ Shifts in practices based on better understanding of agronomic and ecological processes (e.g. ↓ fertilization in a drought context)

  ⇒ ↑ productive and ecological perf.
Organizing production sector to create added value

- Institutional mechanisms of regulation allow protecting the competitive advantage resulting from the link between the product and the territory.
- Transparency of PDO rules guarantees system management to consumers.
- Consumer willingness to pay premium prices for products with a positive image.
- Leading products can benefit to others sold in the same ‘basket of goods’.
- Local transformation creates jobs and allows controlling product quality.
- LFS maintained in ‘marginal areas’ preserve landscape & species-rich grasslands.

⇒ productive, social and ecological performance
Take-home messages

- Grassland-based territories provide different bundle of services according to livestock density and biogeographical areas.

- In each territory, trade-offs exist between economic, environmental and social dimensions.

- Various technical and organizational innovations can shift trade-offs towards improved productive, ecological and/or social performance.

- Win-wins situations are more likely to occur when solutions have been co-designed by various stakeholders (Groot et al. 2007, 2010).

- Getting rid of the assumption that provisioning services should always dominate any other ES is likely to create win-win situations (Howe et al. 2014).

Thanks for your attention!