Sustainability performance of grass-based beef production systems in the Bourbonnais area of France

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Introduction

Assessing sustainability performance of farms

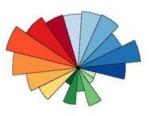
Benefits
Costs
Benefit-cost portfolio

The benefit-cost portfolio provided by animal production systems

Farm income and resilience Employment in livestock farms Value of production Employment in animal industry, Value added Job quality in livestock sector Meat production Animal health and welfare Egg and milk production Nutritious diversified products Carbon sequestration Landscape heritage Biodiversity conservation Acidifying & GHG emissions Maintenance of soil fertility Water and soil quality



Two hypothetical examples of portfolios : Extensive (left) Intensive (right) animal production systems



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Introduction

Assessing sustainability performance of farms



- What are consequences of interventions?
 - Synergies
 - Trade-offs





Introduction

Case study: beef production systems, Bourbonnais area

- Charolais cattle
- Grass-based beef production
 - Cow-calf farms
 - Cow-calf-fattener farms
- Economic challenges







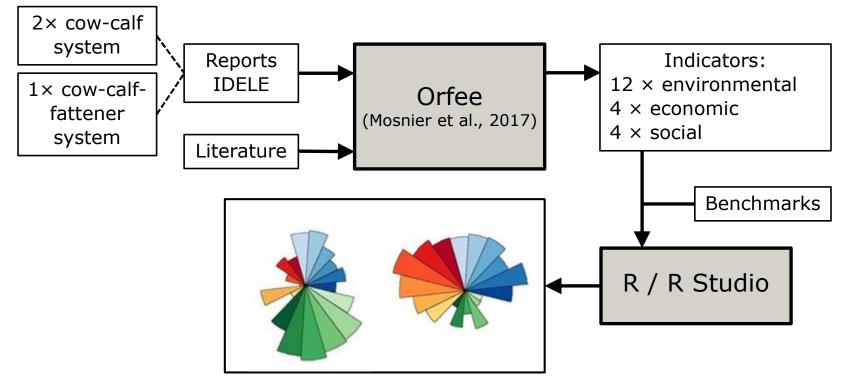
Assess the consequences of interventions on the sustainability performance of beef production systems in the Bourbonnais area







Materials and methods







Materials and methods

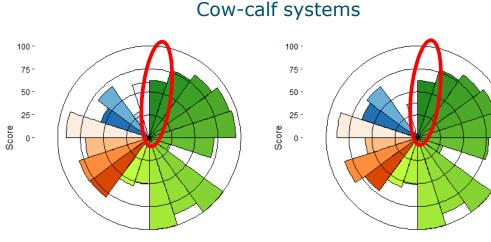
Interventions

- Cultivating protein crops (10 ha)
- Replacing Charolais cattle with Aubrac cattle (25% and 50% herd)
- Increasing area for grass silage (20 ha, 1 cut per year)
- Increasing farm area (20 and 50 ha permanent pasture)

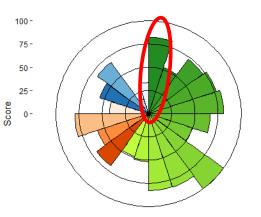




Benefit-cost portfolios







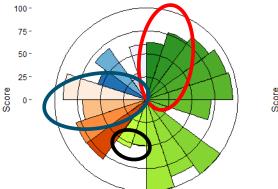
Indicator Beef production Concentrates consumed Percentage herbage in diet (%) Energy self-sufficiency (%) Protein self-sufficiency (%) N-fertilizer use P2O5-fertilizer use N-balance P-balance K-balance GHG emissions Net GHG emissions Gross margin Dependency CAP subsidies Net result Coefficient of variation net result Labour per unit land Labour per livestock unit Farm workers hours (%) Labour off-farm

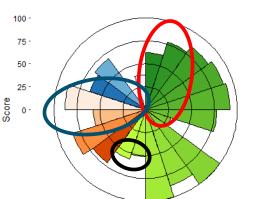




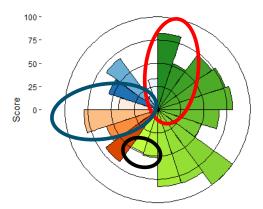
Benefit-cost portfolios

Cow-calf systems





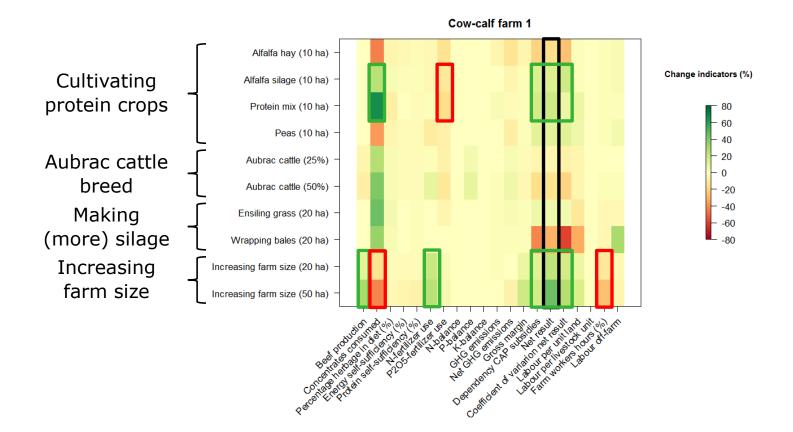
Cow-calf-fattener system

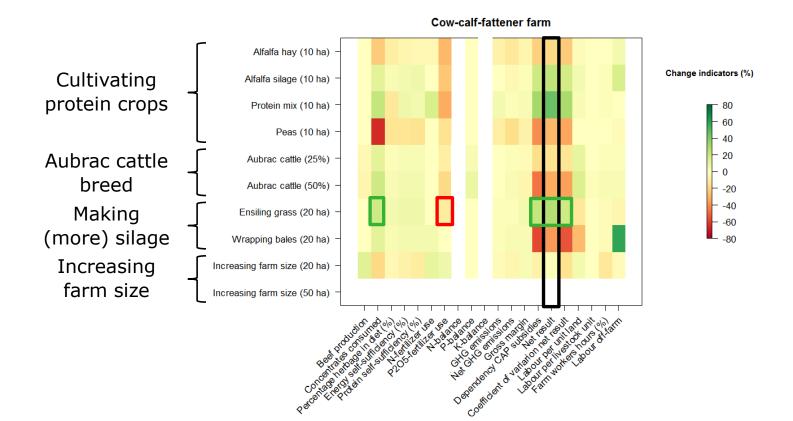


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Conclusions

Benefit-cost portfolios successfully applied to beef production

- Most promising interventions:
 - Cultivating alfalfa for silage
 - Cultivating protein mix
 - Ensiling (more) grass
 - Increasing farm size (mind labour constraints!)





Thank you for your attention!

More information:

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