Sustainable economic and ecological grazing systems - learning from innovative practitioners

SEEGSLIP

Global Food Security
Sustainable, healthy food for all

The UK cross-government programme on food security research

UK Centre for Ecology & Hydrology

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PASTURE FOR LIFE

AHDB
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INNOVATIVE FARMERS

AGRICOLOGY
SUSTAINABLE PRACTICAL FARMING

Sustainable Food Trust
A global voice for sustainable food and health

NATURAL ENGLAND

SEEGSLIP Research questions:

To what extent can innovations in livestock systems support improved ecological, social and economic sustainability?

Are innovations in the PFLA a lever for change?

Pasture Fed Livestock Association (PFLA)

Membership organisation in the UK that champions the unique regenerative role of ruminant animals and the grazed habitats they have evolved alongside

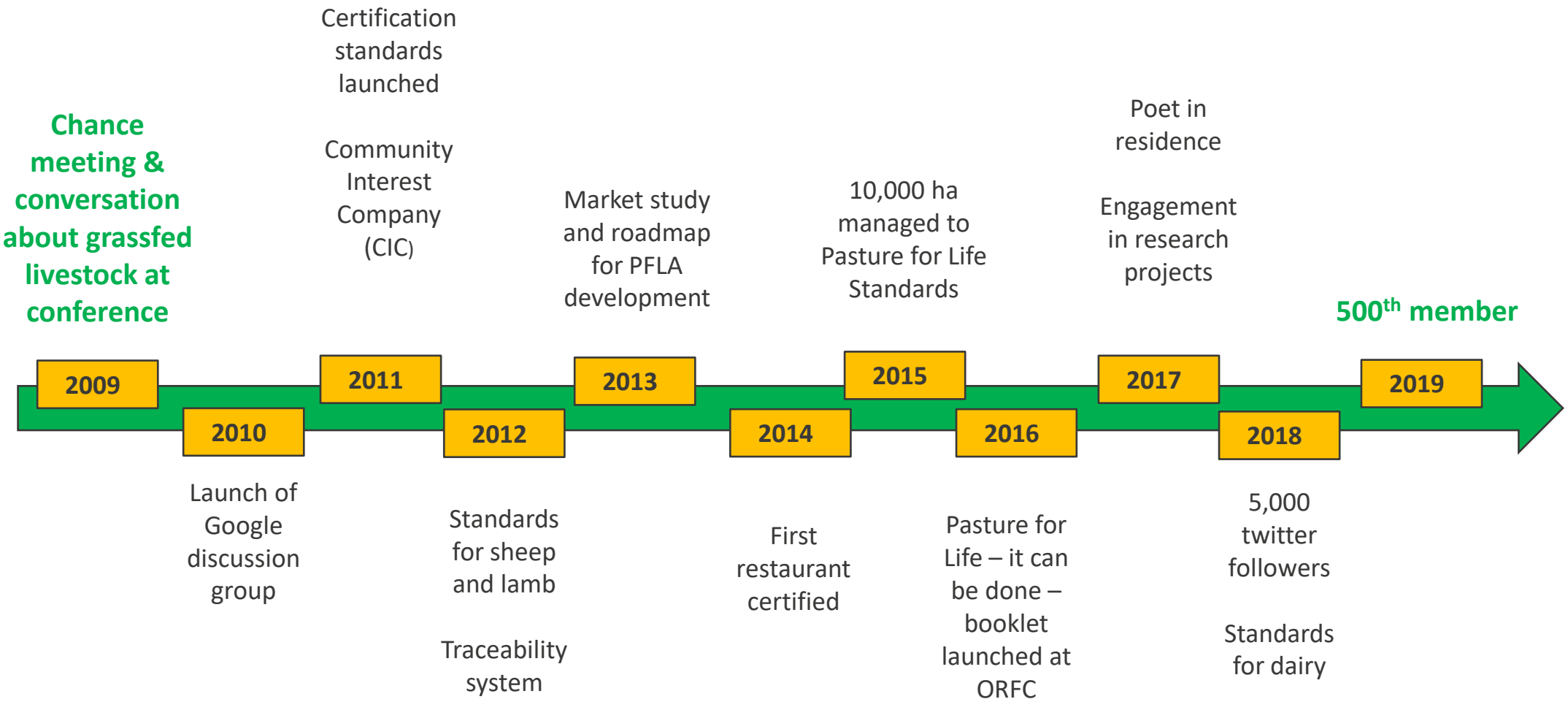
Established as Community Interest Company in 2011

Membership includes over 500 farmers, butchers, retailers and consumers

PFLA has developed a set of Certification Standards

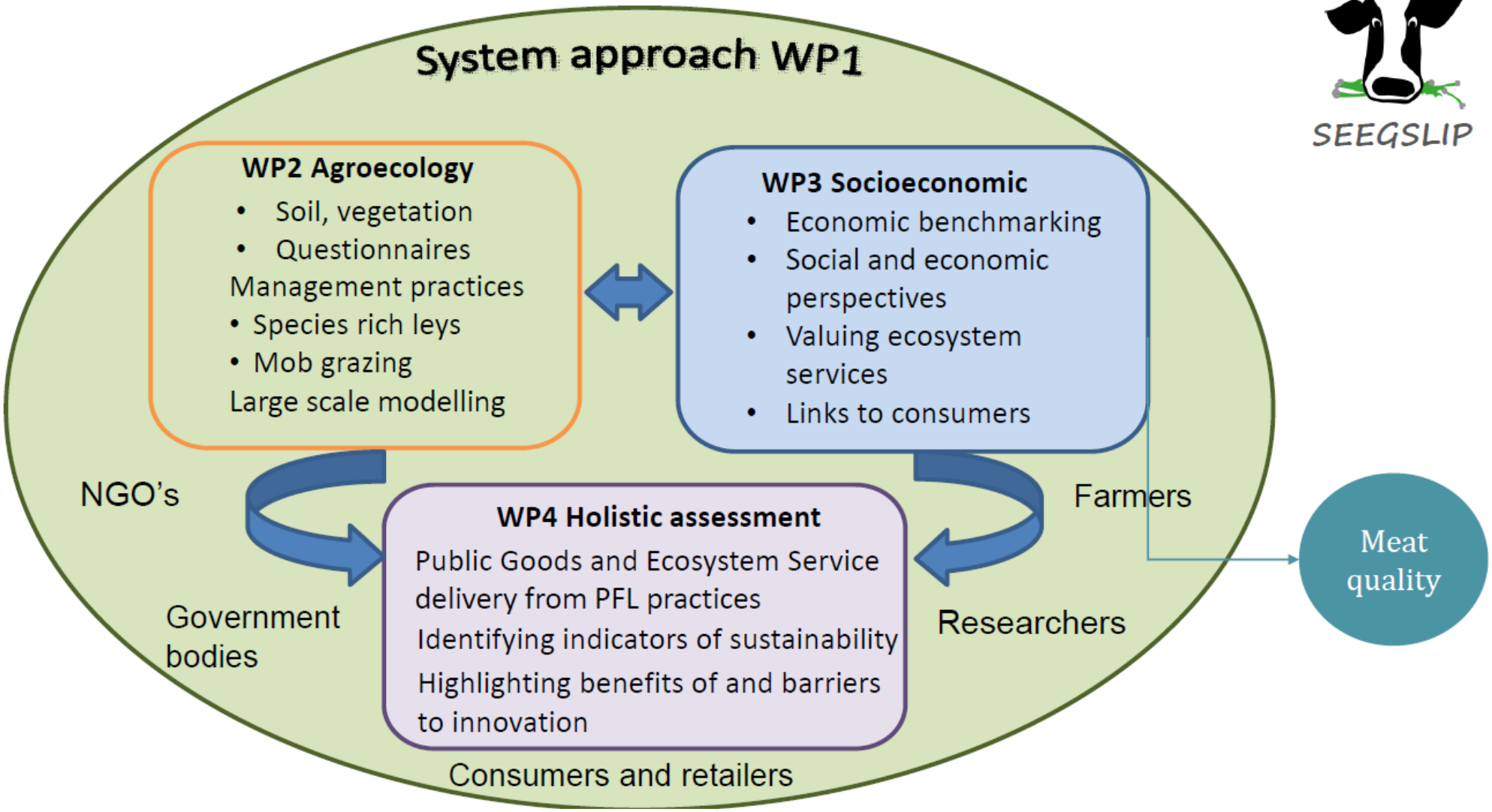
www.pastureforlife.org

Ten-year development of the PFLA



Vetter (2020) *Journal of Rural Studies*

SEEGSLIP project: methods



Farm characteristics – year 1 (56 farms)

- Half of the farms were certified PFLA producers,
- Primarily beef and sheep farms
- Approx. 70% of farms were certified organic
- Sizes from 6 to 1228 ha

Farm locations

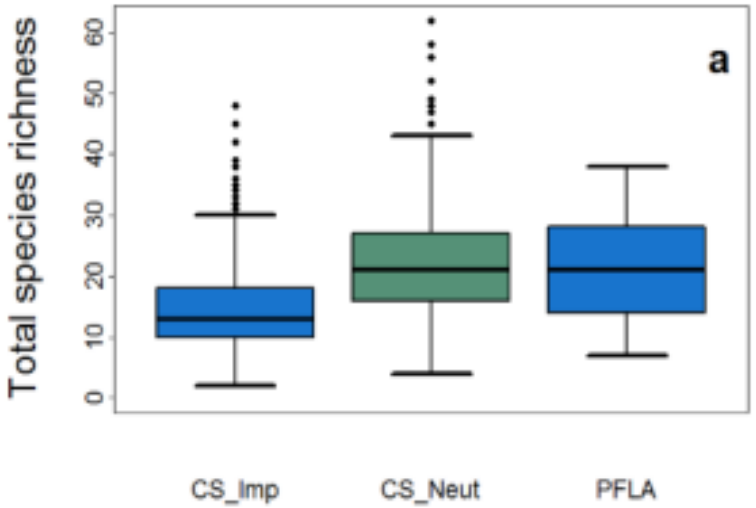
Year 2 – subset of 17 farms (15 from above + 2 new PFLA farms)

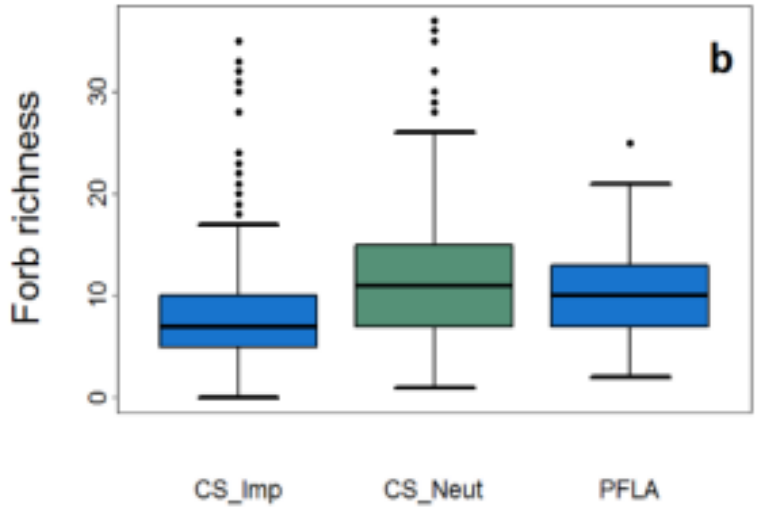
Ecological evaluation:

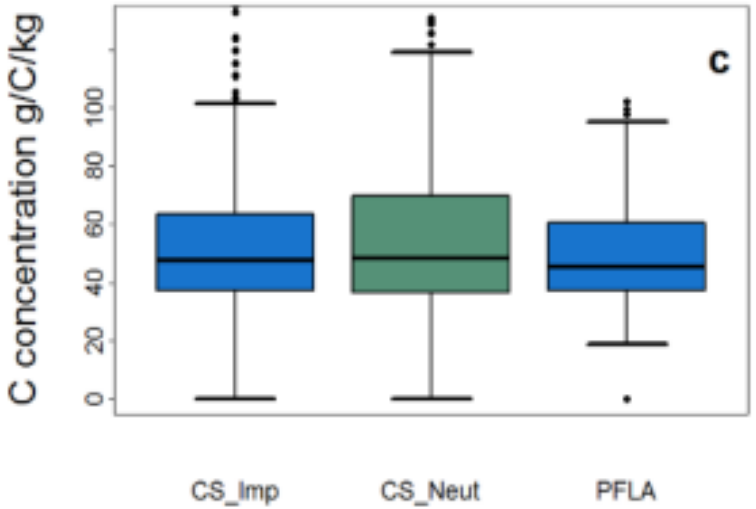
Do pasture fed livestock approaches influence soil and vegetation parameters?

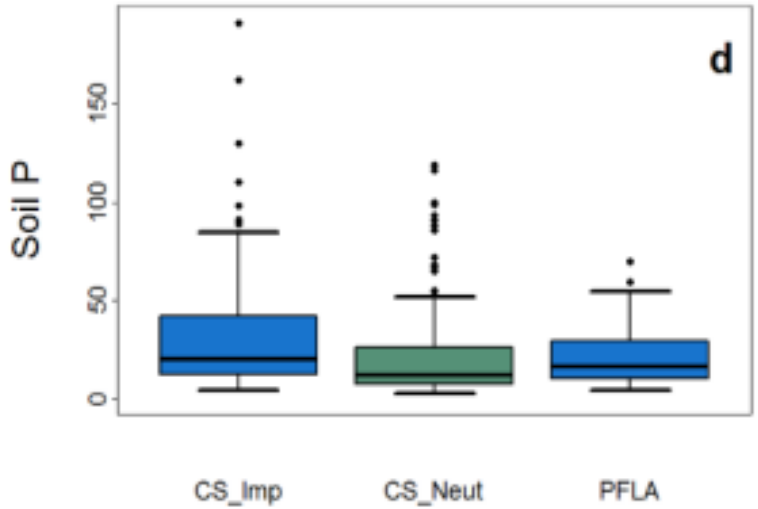
Comparisons were made with data from the GB Countryside Survey for agricultural grasslands (data from 2007)

Ecological condition of PFLA pasture in context:





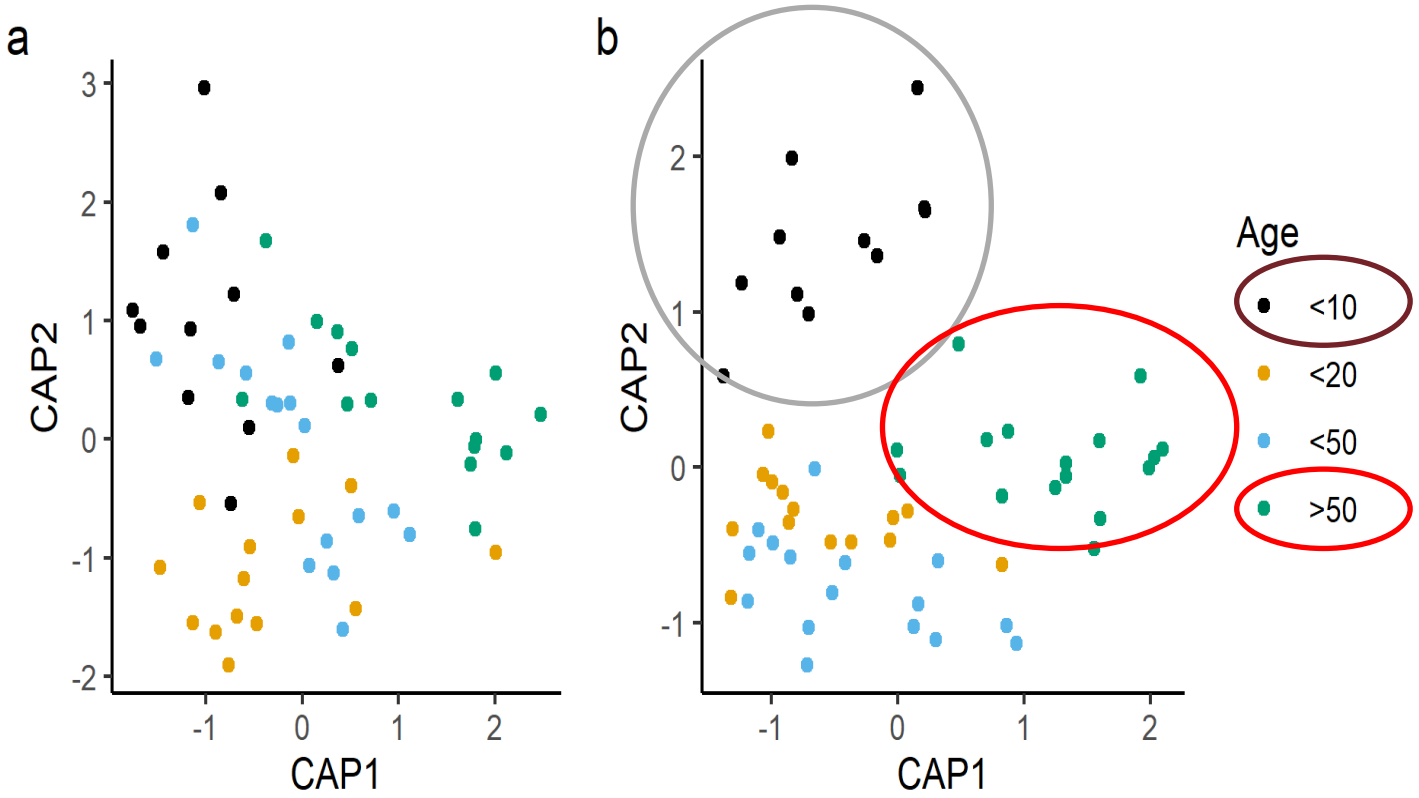




Vegetation was significantly taller in PFLA plots than in CS Improved **and** **Neutral Grassland** plots.

Ecological evaluation:

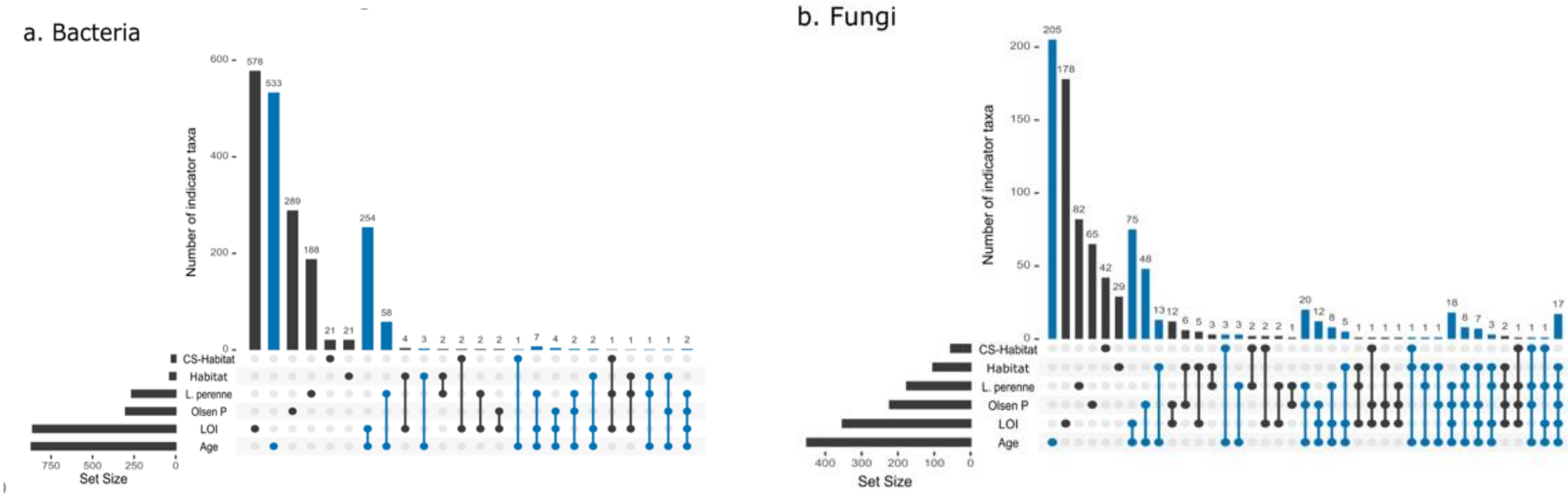
Differences in fungal community composition by pasture age
<10 year, >20 years, <50 years, >50 years



Fertiliser application reduced variation in the fungal communities

Ecological evaluation:

- Many more fungi than bacteria responded to multiple drivers within the farms in the indicator analysis (once pH is accounted for).



Microbial conclusions

- Interactions between the plant community and soil chemistry were very important in determining microbial community structure.
- Important to consider history as vegetation communities may take time to change in response to practices

Socioeconomic assessments: interviews with 17 PFLA farmers

Importance of farmer-led Google group for knowledge sharing was highlighted by multiple interviewees

This group was described as “brilliant” (Farm 05 Interview), “totally helpful” (Farm 03 Interview), trustworthy (Farm 07 Interview), and as having a strongly cooperative ethos: “Totally welcoming and equal, the newest person with five acres is as equal as anybody else” (Farm 05 Interview).

It is clear that social goods - learning, generosity to others, and trust, for example - are generated through this flow and exchange of on-farm trials, results and experiences.

Socioeconomic assessments: interviews-grazing practices

- Only one farmer was intensively mob grazing (as per American examples)
- Several farmers were on a mob grazing journey of experimenting and learning about what might work in their system

One of the reasons I do this moving four times a day is….in Spring turnout…the cows skip when they first leave the sheds. My animals do it four times a day, every day, as they go to the new paddock…..Honestly, I just love it. I set my automatic latches up but if I'm not busy I'll go down just to watch them go through".

Socioeconomic assessments: interviews

- The farmers – not the government - are leading the way
- Realities of the diversity of beef farming – that it is complex and that is not reflected in the media
- Farmers are feeling changes in themselves, how they farm, what they pay attention to and what they

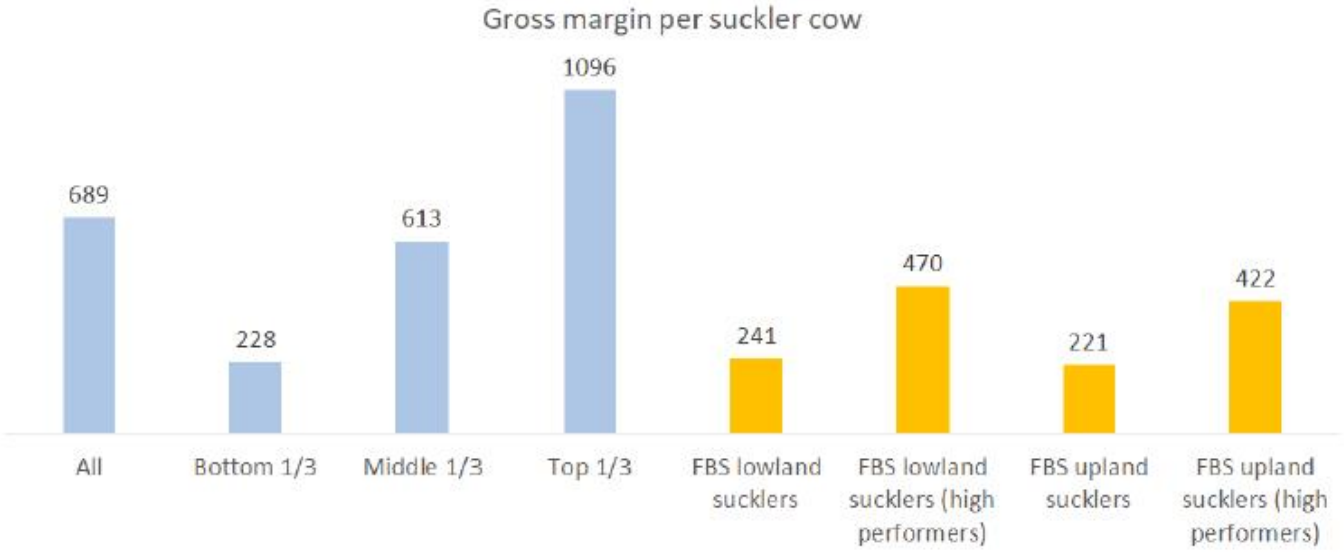
Farmers are learning and acting – not necessarily waiting for policy support.

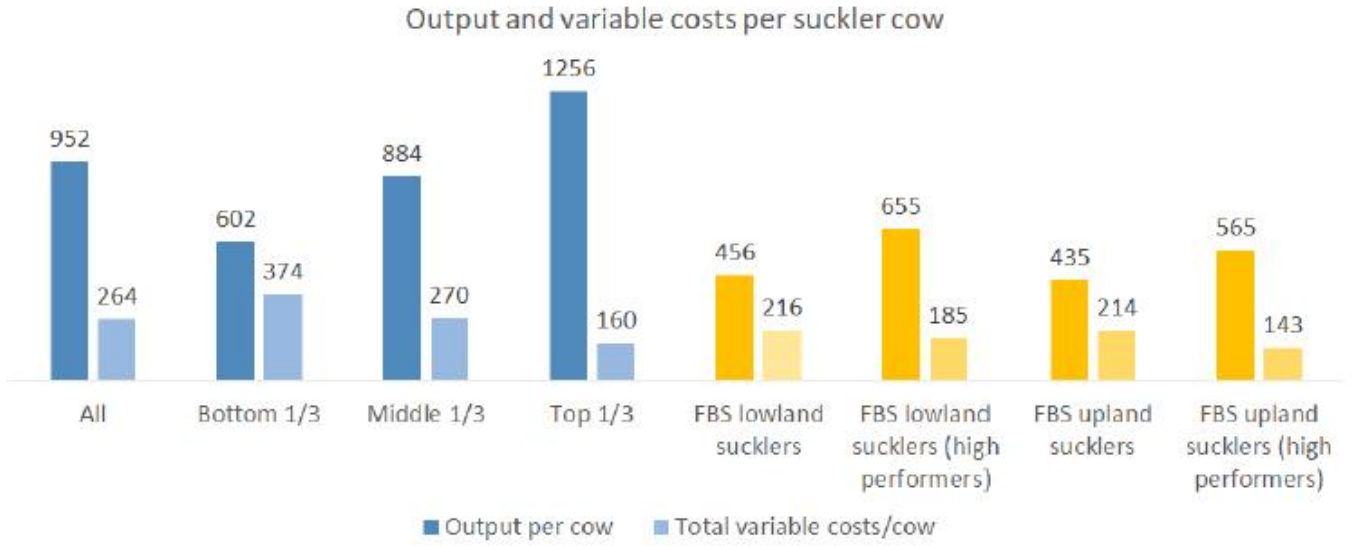
"…the overarching thing was really about trying to make species rich grasslands which are a really valuable resource in my opinion, and one we're losing quite fast, even now. [The goal] is to make them a viable or even, you know, make them part of a thriving agriculture business, so that **the choice is not necessarily thanks to a policy lever which is at the whims of politicians, but something that would drive forward on its own**, if we get it right."

Groundswell, the ORFC, national and international meetings

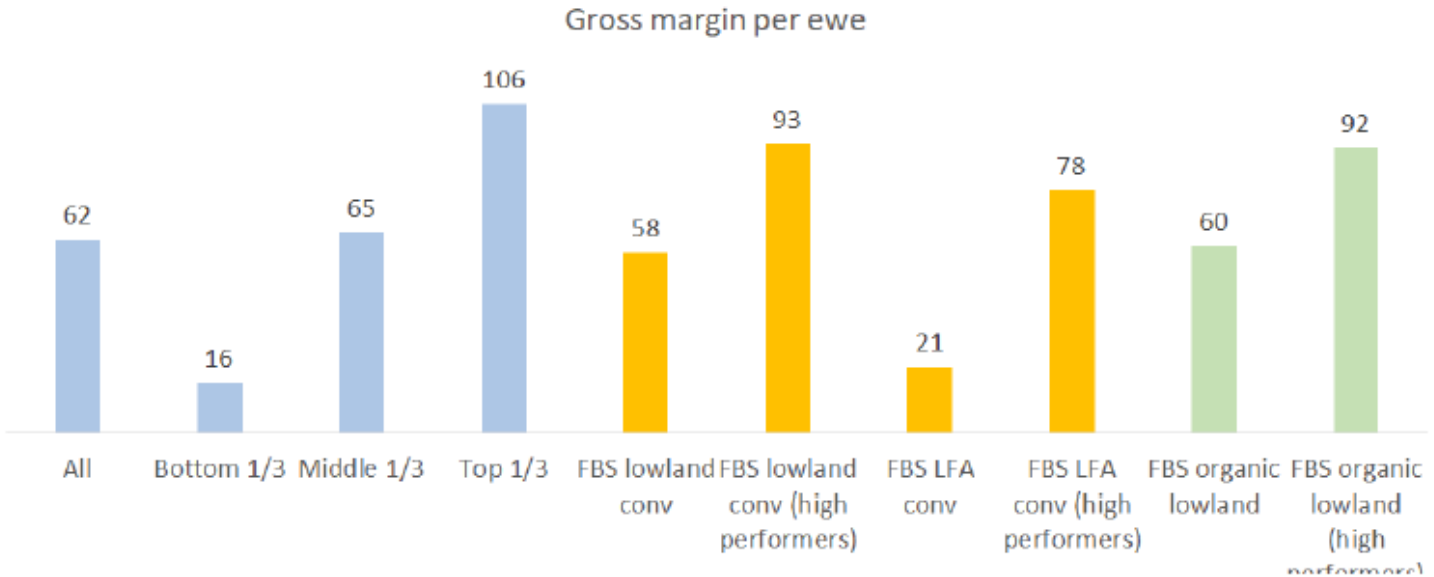
- Farmers are thinking about the importance of other structures for them – marketing and supply chain, certification, abattoir networks, media focuses on meat, etc.

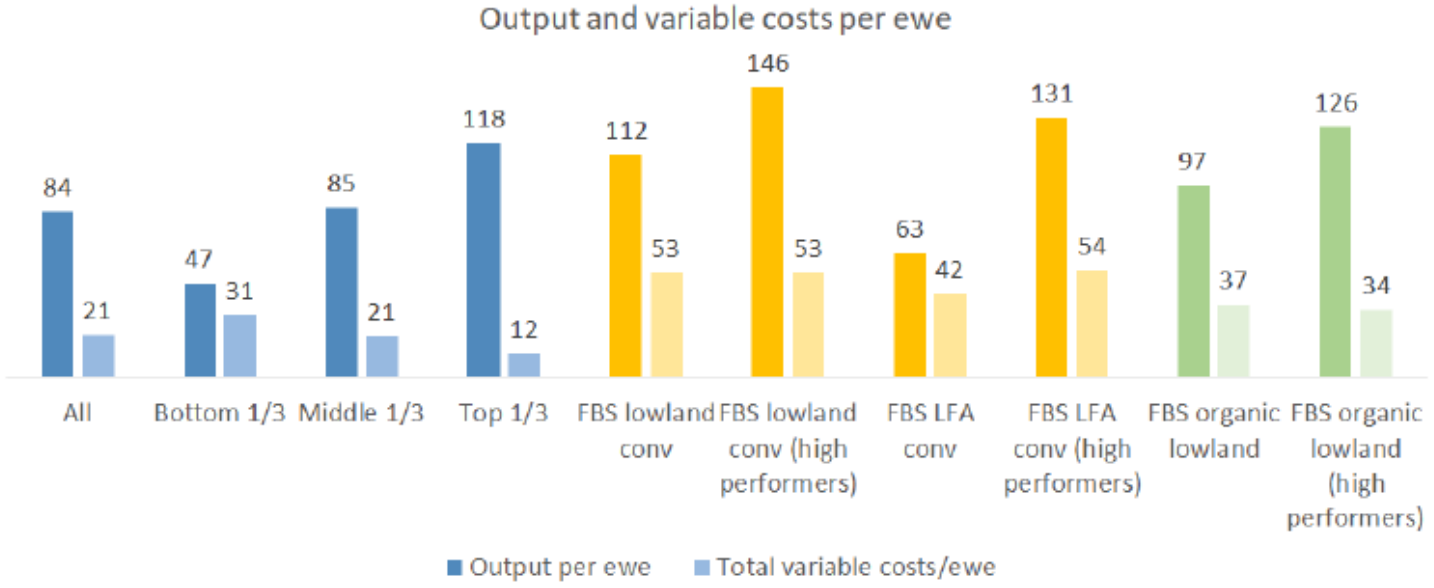
Economic evaluation: beef suckler herds





Economic evaluation: sheep





Economic analyses

High variability across the PFLA sample

High costs in beef sector a result of increased processing and marketing costs

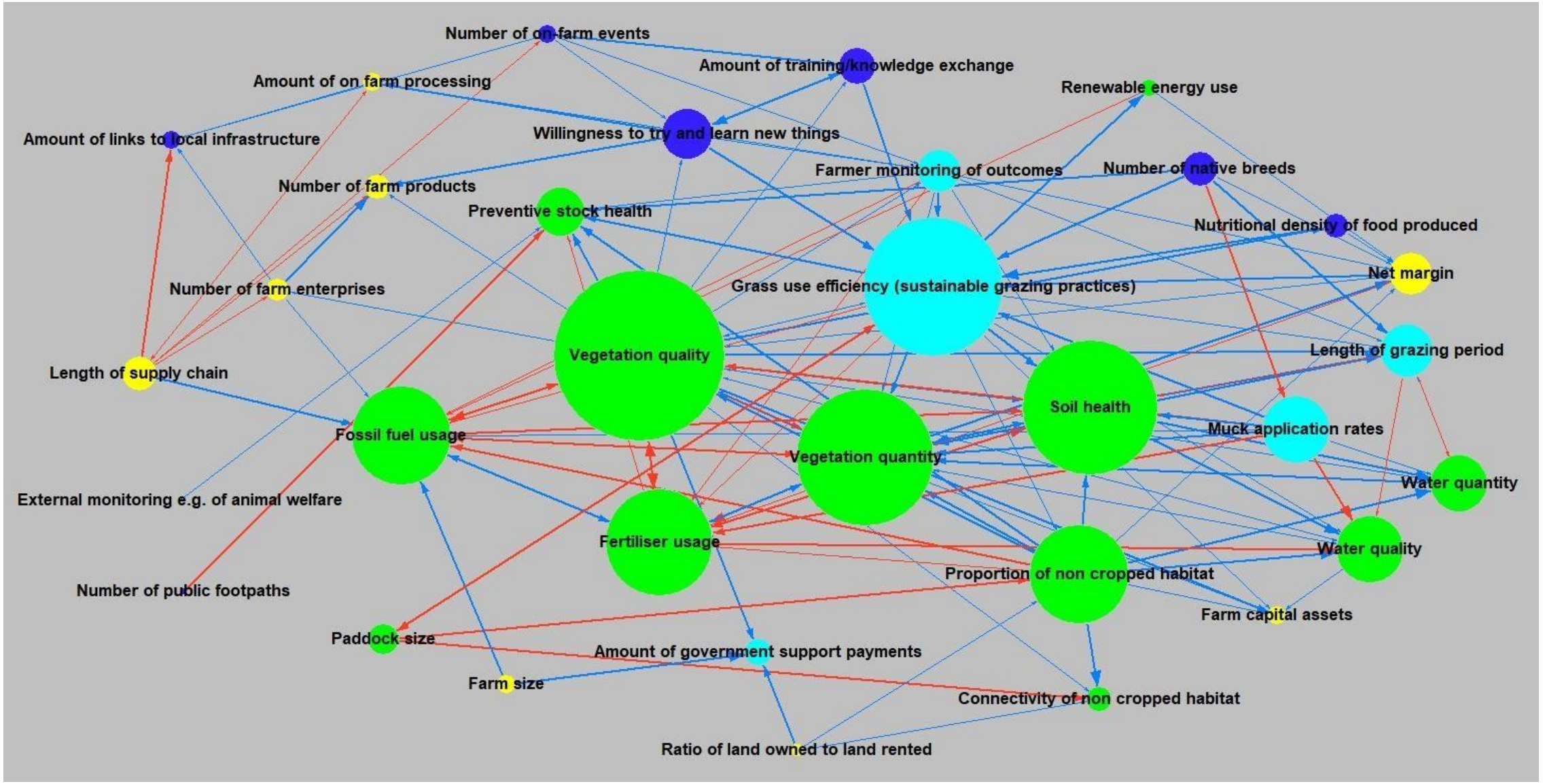
Overall the PFLA were often outperforming the Farm Business Survey (FBS) sample

Key reasons:

1) Higher prices through direct sales

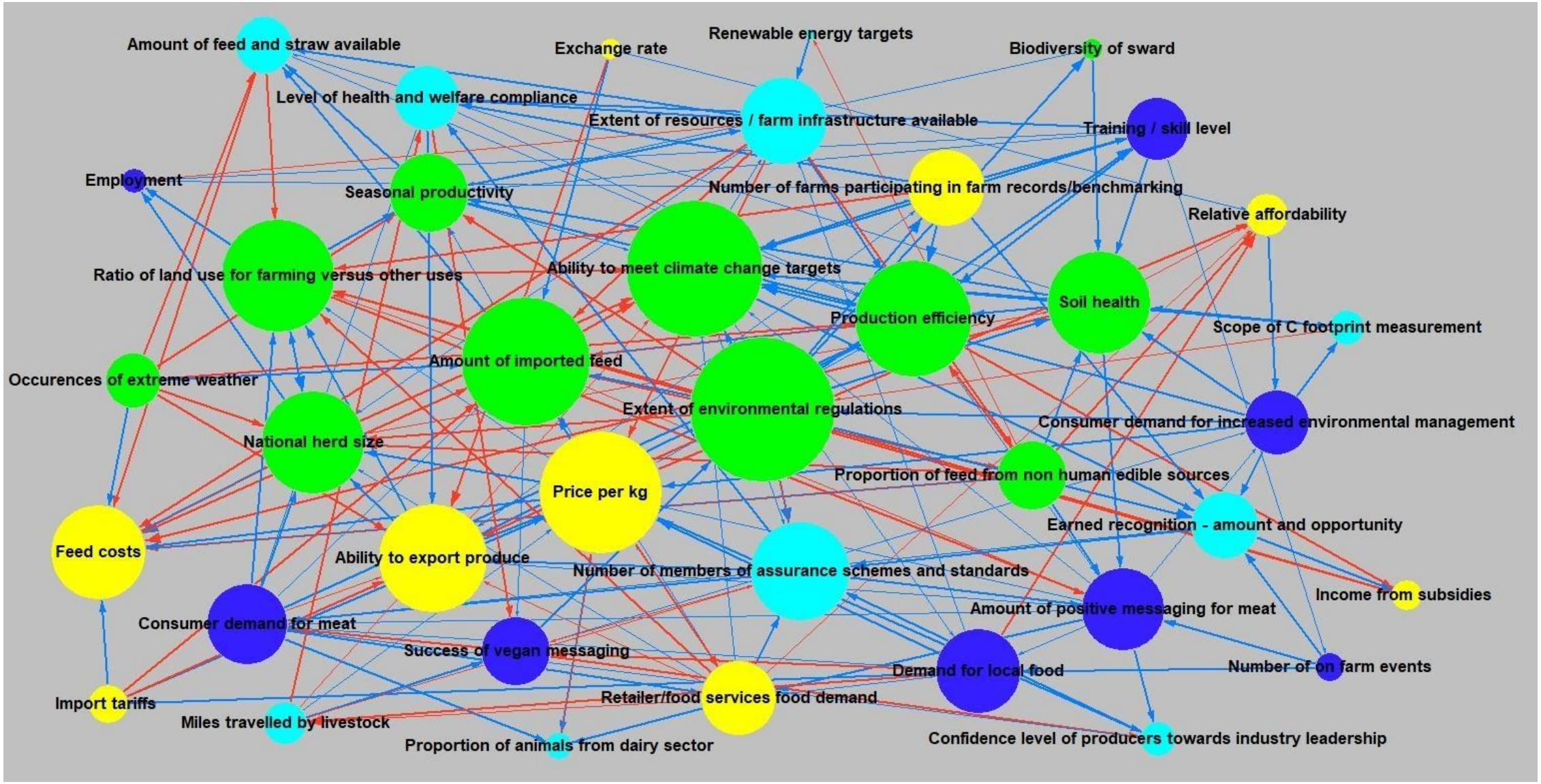
2) Less production inputs (especially for sheep)

Holistic assessment: Fuzzy Cognitive Mapping (FCM) with PFLA



Sustainability component (FAO, 2014): environmental economic social governance

Holistic assessment: FCM with conventional beef sector



Sustainability component (FAO, 2014): environmental economic social governance

Holistic assessment: FCM analyses

Relatively **simple structure** of the pasture fed FCM

Focus on **“internal” (within farm) elements**

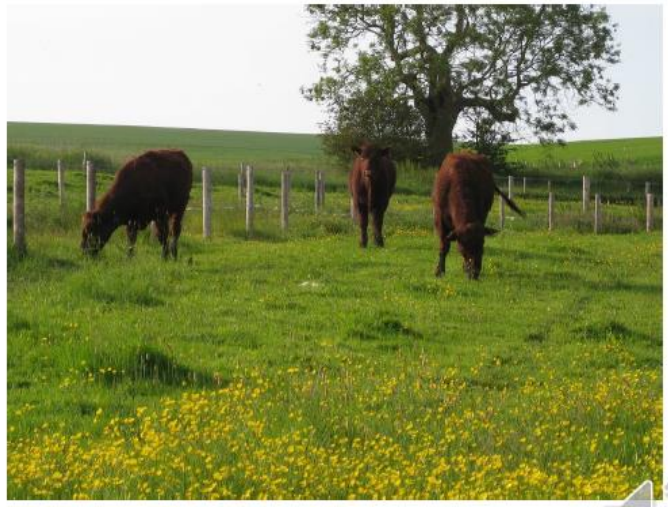
- Components ‘vegetation quality’, ‘grass-use efficiency’ and ‘soil health’ were most central

Focus on **“external” (market and regulatory)** elements within conventional beef FCM:

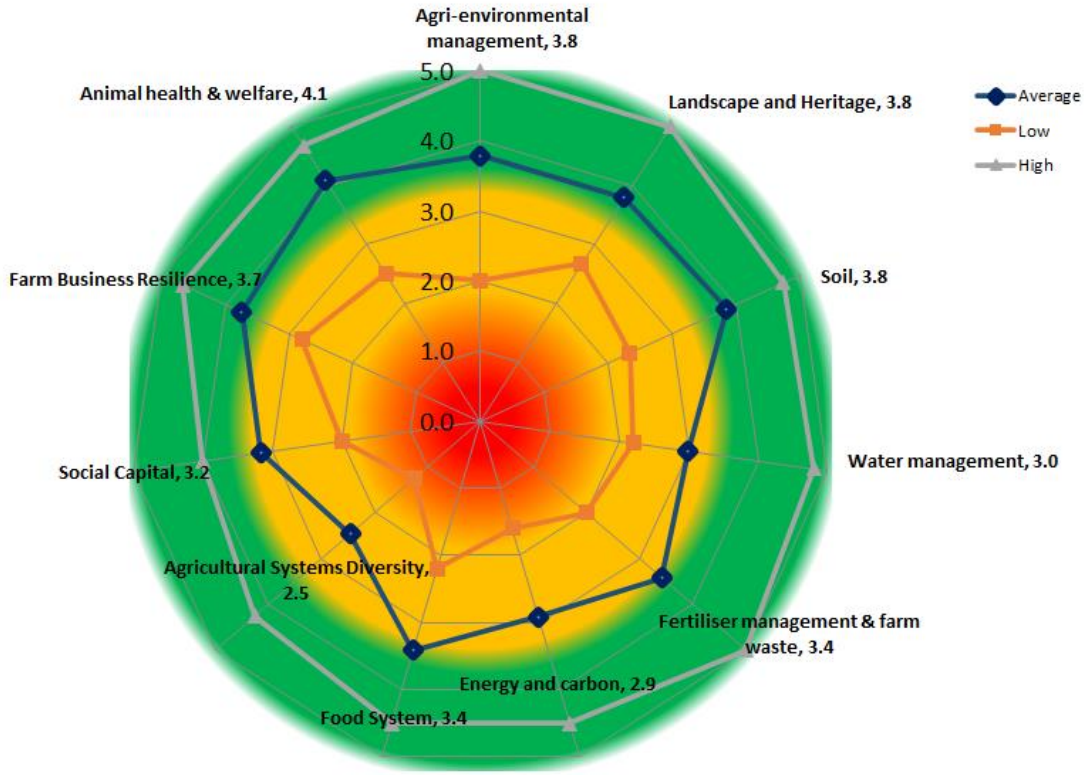
- Components ‘environmental regulations’, ‘ability to meet climate change targets’, ‘amount of imported feed’ and ‘price per kilo’

Predictions of a 100% switch to pasture fed systems in the UK:

- Increases in **subsidies** for beef farmers
- Decrease in **ability to export** produce
- Decrease in **% of feed currently used from non-human edible sources** (potentially) making more of such food available for other livestock



Holistic assessment: Public Goods tool (PG tool)



Highest scoring "spurs" were animal health and welare, soil and agri-environmental management

Lowest scoring "spurs" agricultural systems diversity, energy and carbon and water management

Highest variation "Agricultural systems diversity, Food system, Fertiliser management"

Holistic assessment:

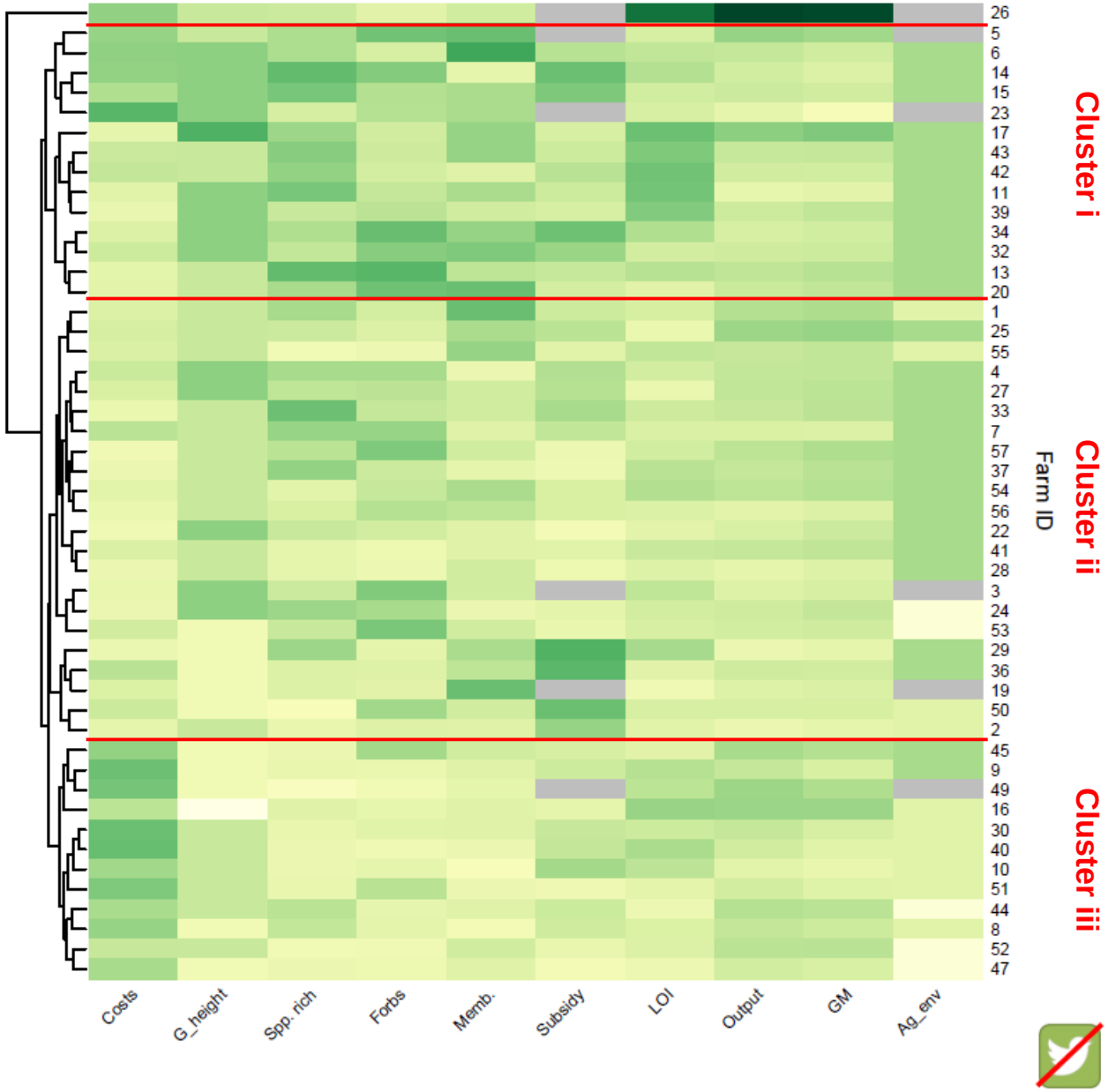
cluster analysis

Cluster (i) – farms with highest values for PFLA membership and environmental indicators

Cluster (ii) – farms with highly variable performance for environmental indicators and medium membership years

Cluster (iii) – farms with lowest environmental performance and highest costs and lowest membership years

Heat map of environmental and economic variables



Holistic assessment:

interactions across variables

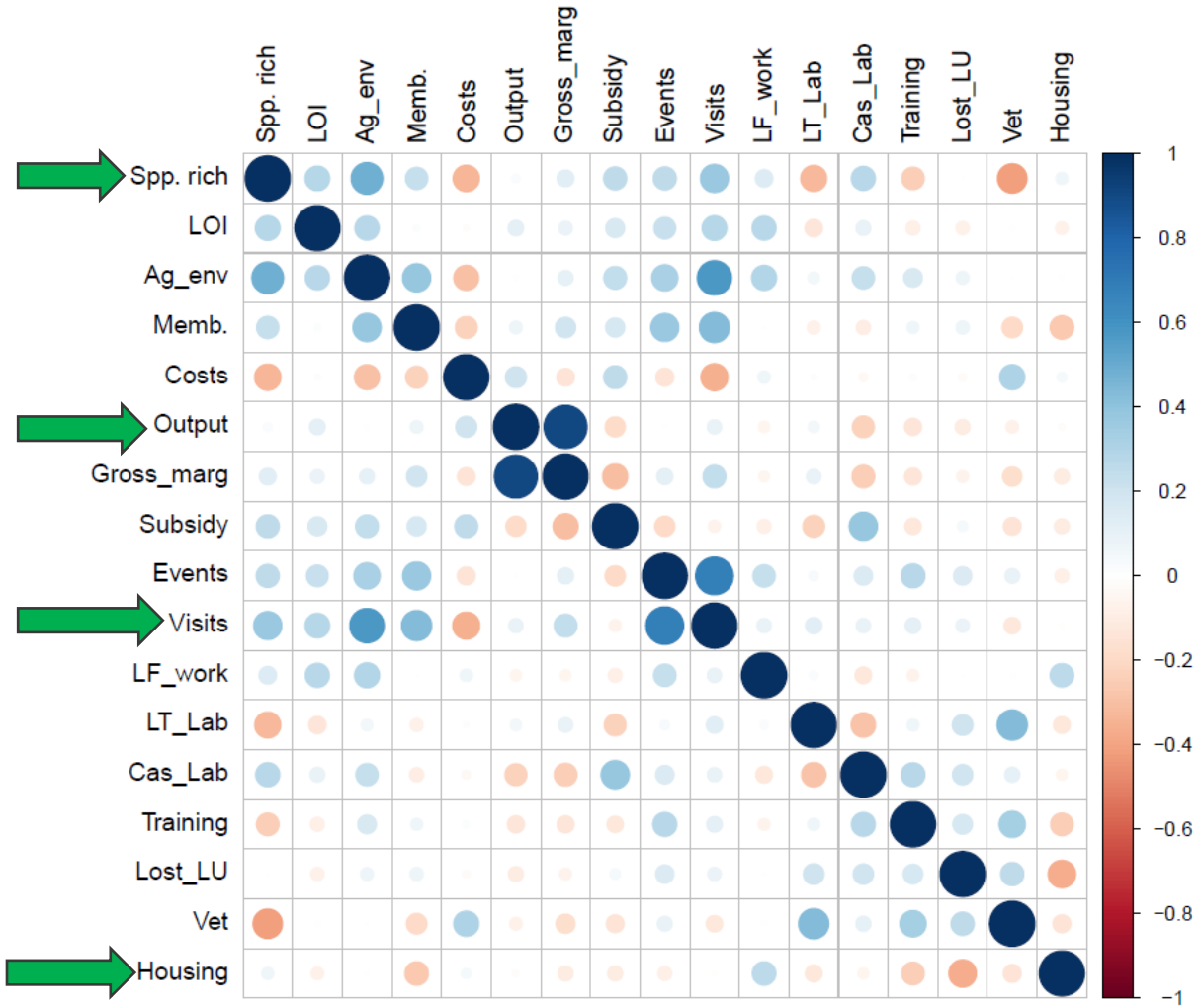
As **species richness** increased **total costs** and farm spend on **veterinary medicines and vet fees** decreased
(R -0.33, P<0.05, R −0.42, P <0.01)

Total **income** from livestock was highly correlated with the total **gross margin** (R 0.91, P<0.01)

Level of **participation in agri-environment schemes** (Ag_env) was positively correlated with the **number of visitors** (Visits, R 0.57, P<0.01)

As **housing condition increased** lost livestock decreased
(Lost LU, R -0.36, P<0.05)

Correlation plot of PG tool and field data



Conclusion and recommendations

Pasture-fed livestock farmers are delivering a wide range of public goods

Farmers – not the government - are leading the way within the PFLA and driving change within the sector

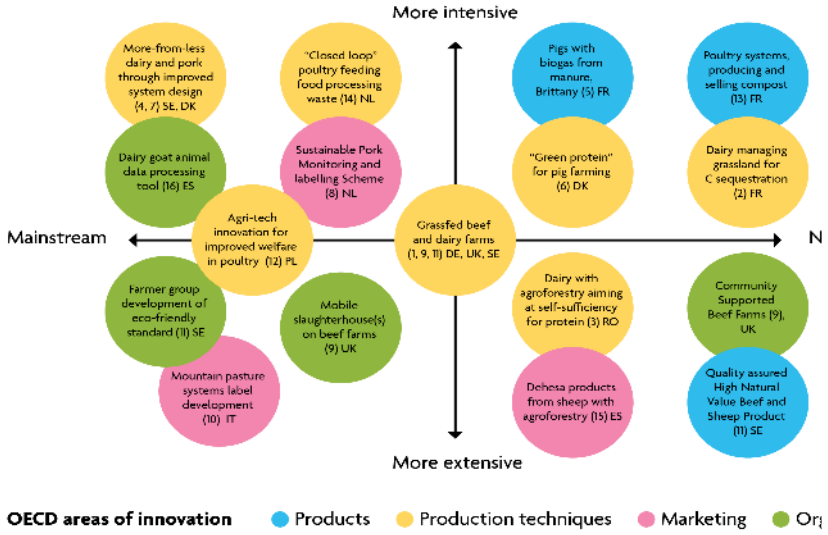
Farmers are learning from another and enjoying the support, the google forum, local meetings, Groundswell, Oxford Real Farming Conference and international meetings

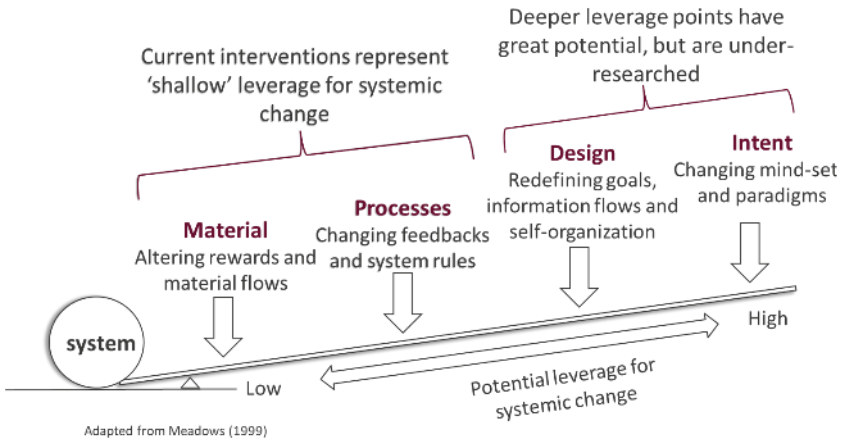
Collaboration, local networks and support for new entrants is key

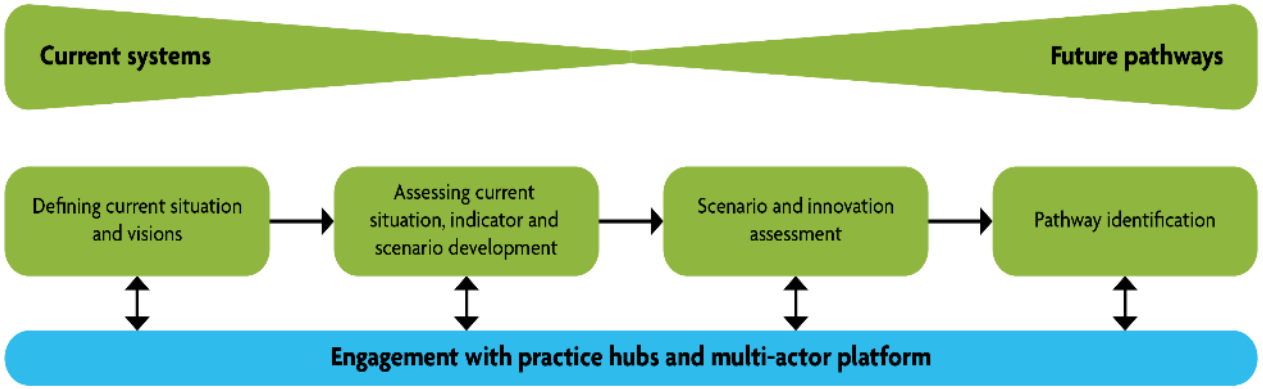
Farmers are thinking about the importance of other structures for them – marketing, supply chain, certification and abattoir networks

Can we support such activity through Research and Innovation projects?

PATHWAYS - Pathways for transitions to sustainability in livestock husbandry and food systems



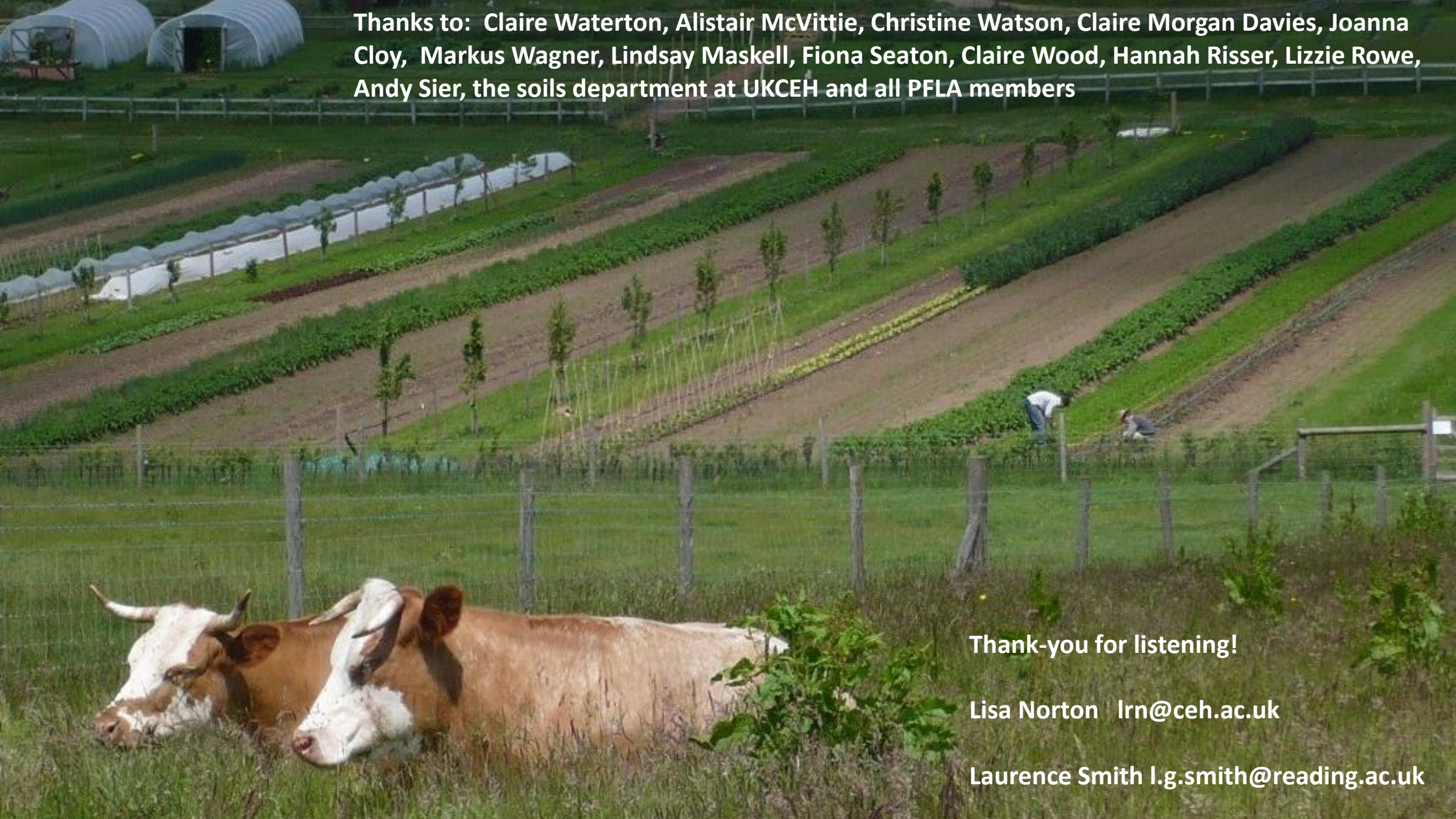




https://pathways-project.com/

European Commission
Horizon 2020
European Union funding
for Research & Innovation

Thanks to: Claire Waterton, Alistair McVittie, Christine Watson, Claire Morgan Davies, Joanna Cloy, Markus Wagner, Lindsay Maskell, Fiona Seaton, Claire Wood, Hannah Risser, Lizzie Rowe, Andy Sier, the soils department at UKCEH and all PFLA members



Thank-you for listening!

Lisa Norton lrn@ceh.ac.uk

Laurence Smith l.g.smith@reading.ac.uk