

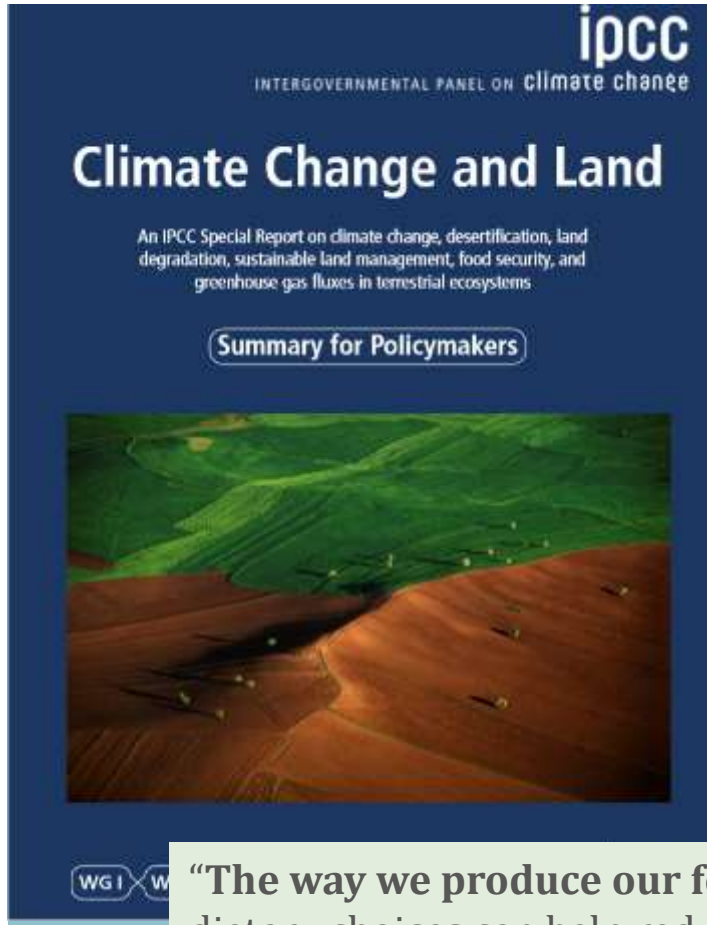
Sustainable economic and ecological grazing systems - learning from innovative practitioners



SEEGSLIP

Lisa Norton - UKCEH, Claire Waterton - Lancaster University, Christine Watson, Claire Morgan Davies - SRUC, ORC, Laurence Smith, RAU

Timely, as we begin a debate on the WAY we produce beef:



“The way we produce our food matters; dietary choices can help reduce emissions and pressure on land” (IPCC 2019)



Wakanui Feedlot Drone screenshot from

Dr Anne Galloway, Associate Prof Wellington comments:

How important are consumer att

"New Zealand livestock farming's

towards diffe
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New Zeala
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be seen by consumers as a betrayal of their values.



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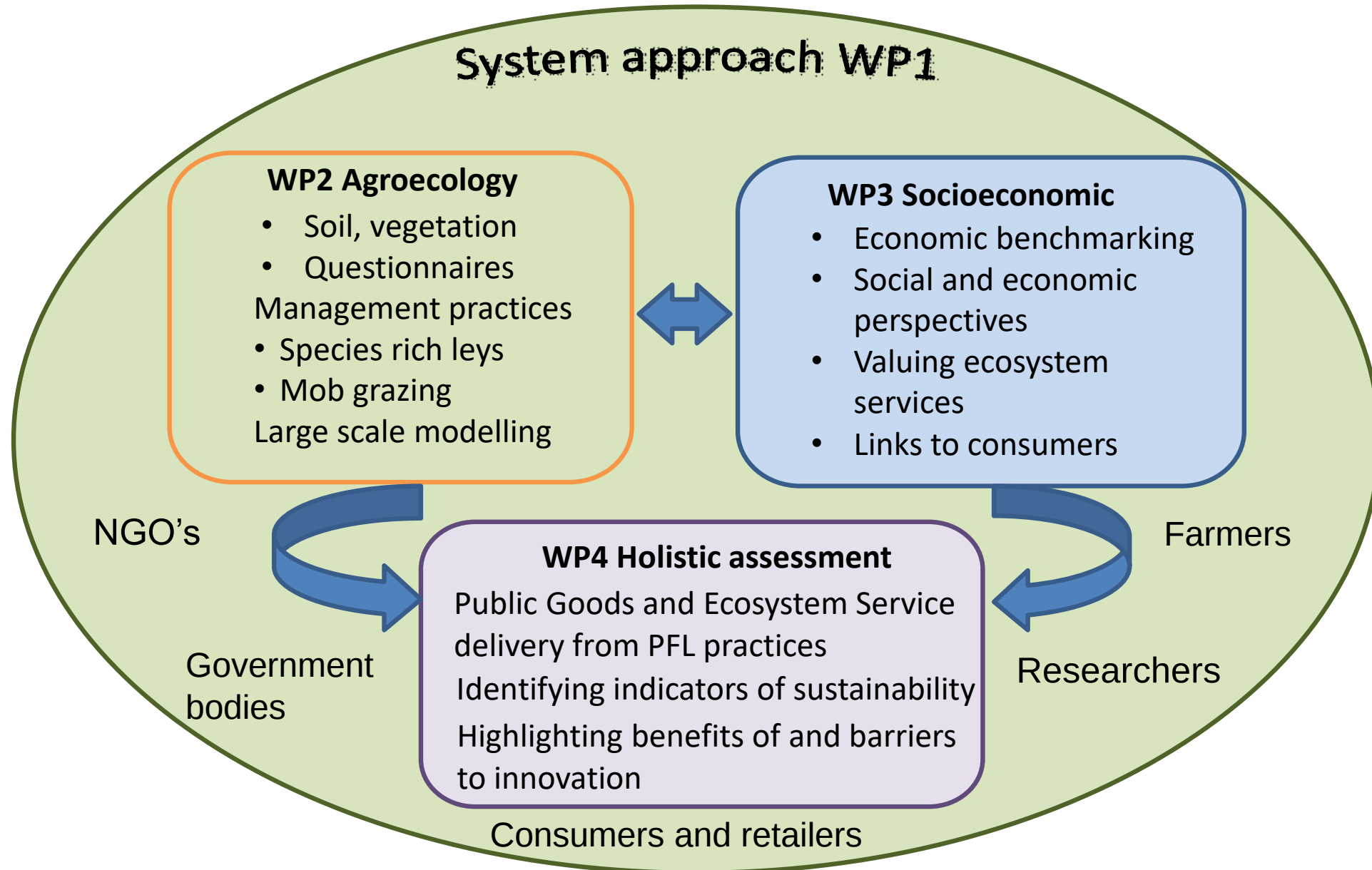
Lifestyle Food and drink Food and drink features

Forget free-range: is grass-fed and pasture-raised better for animals, industry, and us?





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Fieldwork & interviews



Grassland context for PFLA farms

Countryside Survey – national survey of GB repeated roughly ‘decadally’ since 1978

- Includes random vegetation and soil samples of habitats across GB
- Most common habitats in GB - ‘Improved’ grassland and ‘Arable’
- Most comparable to PFL farmland – ‘Improved’ and ‘Neutral’ grassland

CS results

Arable and Horticulture
Improved Grassland
Neutral Grassland

Names		2007
<i>Lolium perenne</i>	Rye Grass	1
<i>Holcus lanatus</i>	Yorkshire Fog (Grass)	2
<i>Arrhenatherum elatius</i>	False-oat (Grass)	3
<i>Urtica dioica</i>	Stinging Nettle	4
<i>Crataegus monogyna</i>	Hawthorn	5
<i>Agrostis stolonifera</i>	Creeping Bent (Grass)	6
<i>Rubus fruticosus</i> agg.	Bramble	7
<i>Dactylis glomerata</i>	Cocksfoot (Grass)	8
<i>Agrostis capillaris</i>	Common Bent (Grass)	9
<i>Festuca rubra</i> agg.	Red Fescue (Grass)	10

richness 2007

10.3

14.3

20.4

98-07

78-07

	↓	↓

What can CS tell us about grassland qualities?

	Vegetation metrics					
Soil metrics	Ryegrass cover		Legume cover		Species richness	
Soil C	✓	↓	✓	↓	✓	↑
Soil Moisture	✓	↓	✓	↓	✓	↑
Soil N					✓	↑
Total taxa (soil)	(✓)	↓	✓	↑	✓	↑

- CS data shows that as management intensity increases (fertiliser, lime, etc.), carbon stocks reduce at surface and depth (Ward et al. 2016)

Analysis will further investigate:

- Impacts of change in management intensity on soil and plant diversity and interactions with soil Carbon



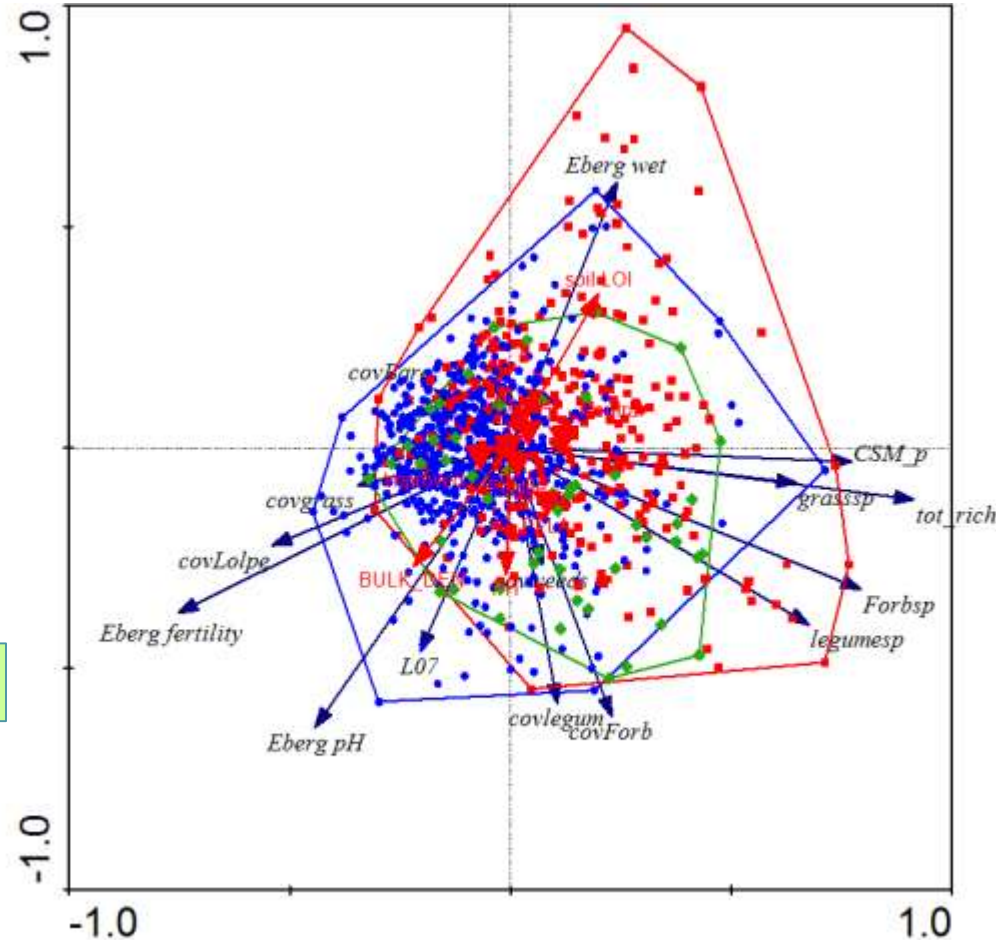
Ecological condition of PfL pasture in context

Ordination of sampled plots
vegetation and soil variables



Fertility, Cover of ryegrass, pH

Soil wetness and Carbon content

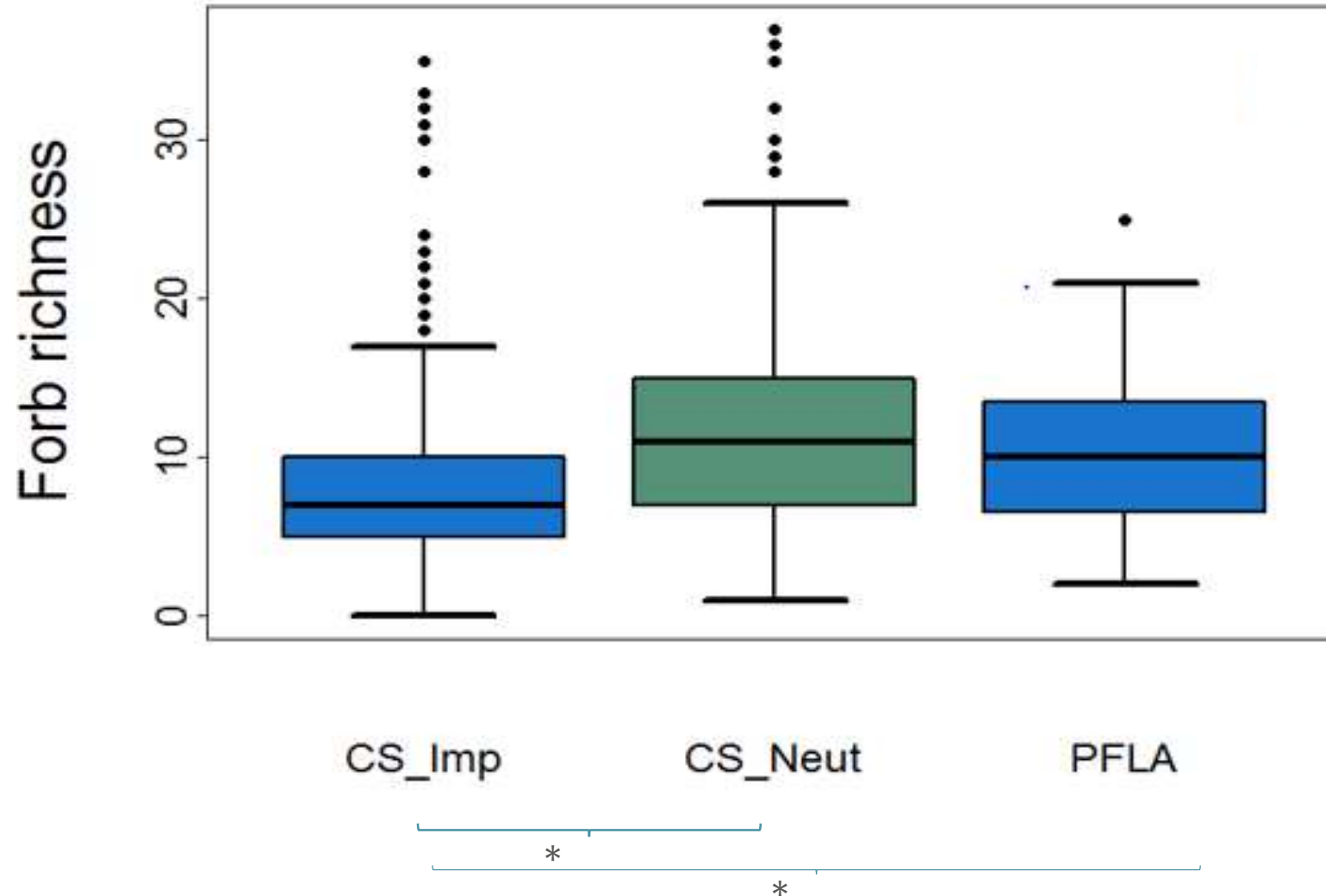


CS Improved grassland
CS Neutral grassland
PFLA

Higher species richness

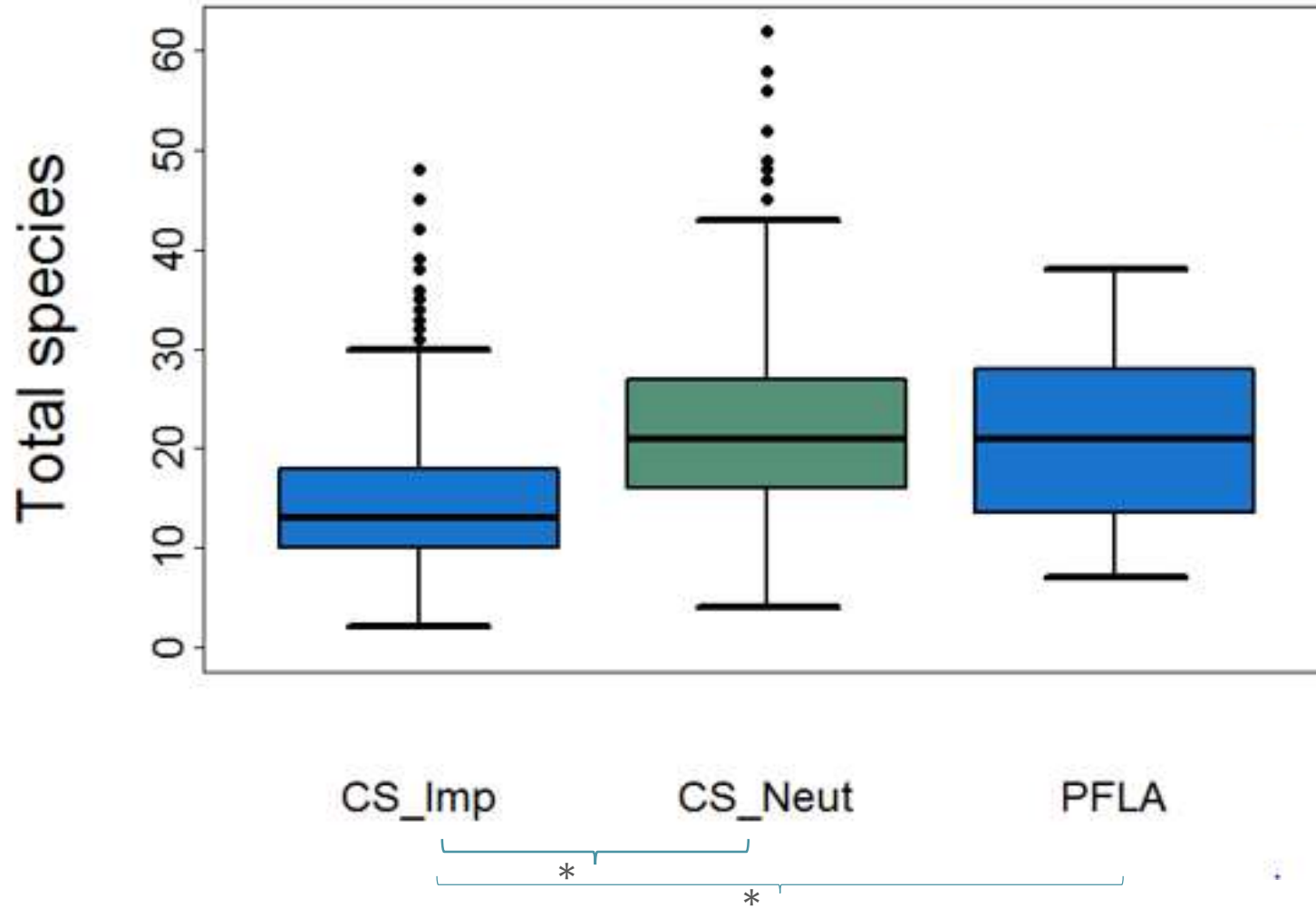
Cover of legumes and forbs (herbs)

Ecological condition of Pfl pasture in context



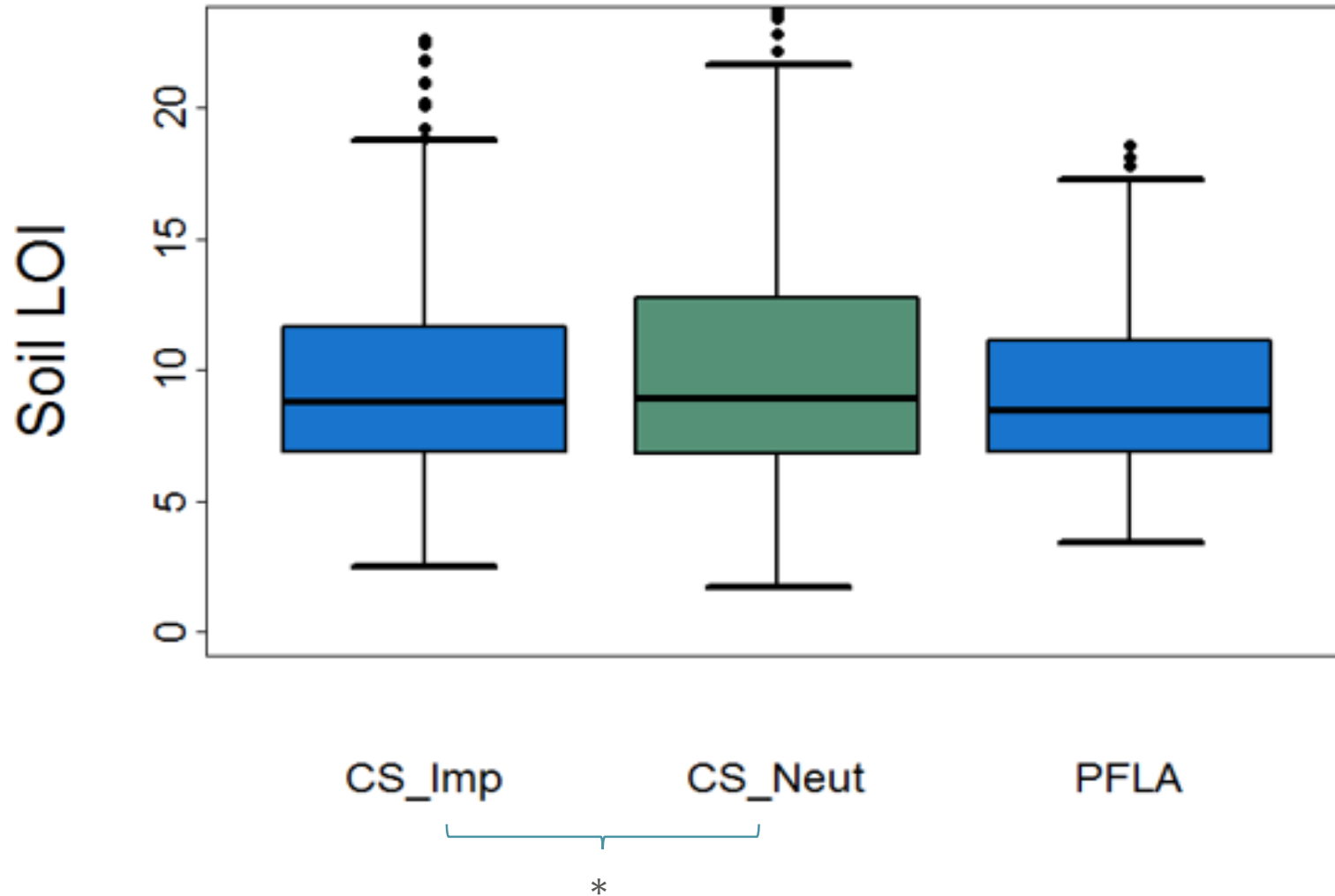
Forb richness is high on PFLA farms

Ecological condition of Pfl pasture in context



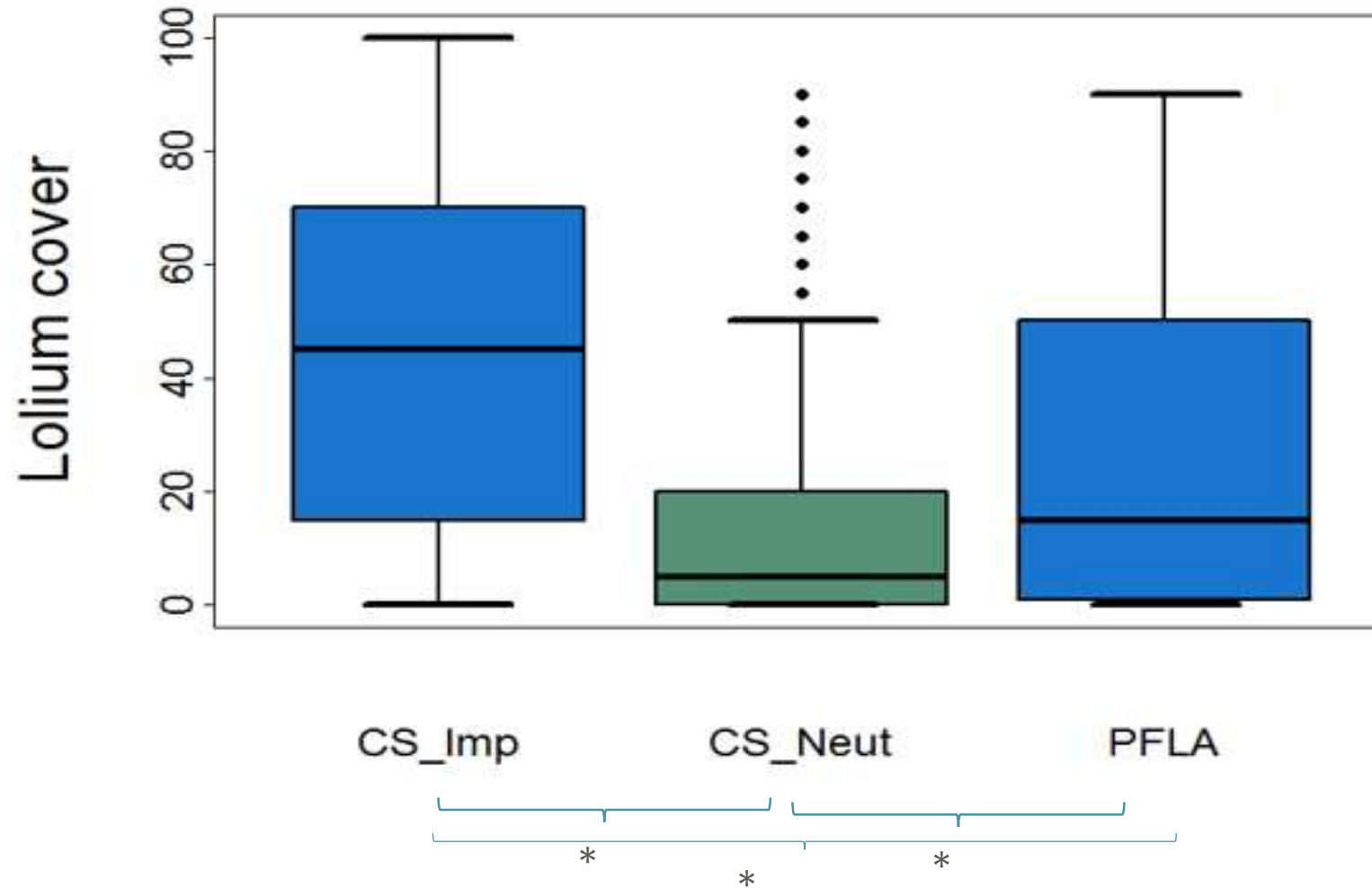
Total species richness
is high on PFLA farms

Ecological condition of Pfl pasture in context



Soil Carbon on PFLA farms is not significantly different to that on Improved grassland

Ecological condition of Pfl pasture in context



Ryegrass cover is low on PFLA farms relative to Improved grassland

Further analysis of this data will investigate:

- More detail on species composition and soil properties, including:
- Soil microbiota, e.g. fungal/bacterial ratio and beneficial fungi
- Management effects on soil and vegetation variables:
 - I. Time under management (and previous management)
 - II. Length of grazing/rest periods
 - III. Inputs (organic/
 - IV. Stocking (type/numbers)

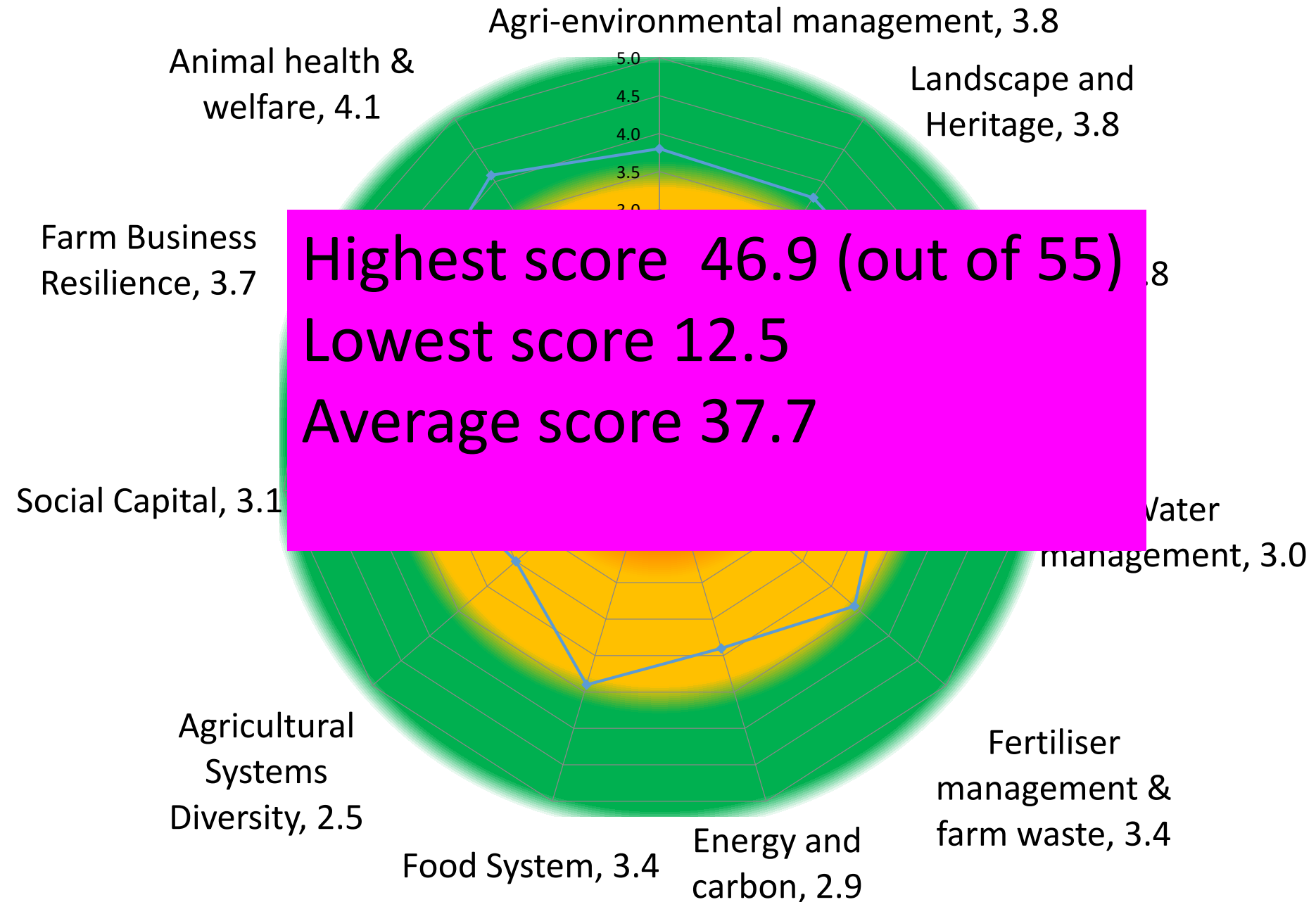




Public Goods Tool

Average scores across 56 PFL farms

Public
Goods
Tool
(ORC)



Social dimensions of Pfl farming

1. Farmers are very discerning about advice and research available to them:

“I don’t feel that an awful lot of the current advice giving channels are really looking after our interest or the planet’s interest really”

2. They are creating their own forms of knowledge and advice: “most of the innovative farming stuff that’s going on, it’s all coming from farmers, coming from below”



Social dimensions of Pfl farming

3. Farmers note a lack of discernment in food retailers

“Morrisons will buy a lot of our beef because they are short horn, and Morrisons like short horn... but they really couldn't give a stuff how we produce it... “

4. But Pfl farmers value the multiple benefits of Pfl methods anyway

“...we are producing more and more with less and less”

“...and improving the soil, and more carbon, less fertiliser, no worming”

5. Farmers are learning together

“...there's so much of interest posted in the [PFLA] Google group and including you know research and things.”

“they write amazing, insightful helpful answers, which in terms of money,..... is into the thousands of pounds on the smallest farm.”



Social dimensions of Pfl farming



6. 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.**”



Next steps

- Publication of year 1 results & workshops with farmers
- Analysis of year 2 results (mob grazing, species rich leys)
- Integrating results to improve understanding of what works and why? (agricultural, social, economic, ecological)
- Consumer studies
- Modelling and extrapolation
- Integration with other studies (nutritional quality, life cycle analysis)



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UK Centre for
Ecology & Hydrology



Benchmarking of Pasture for Life farms

Alistair McVittie



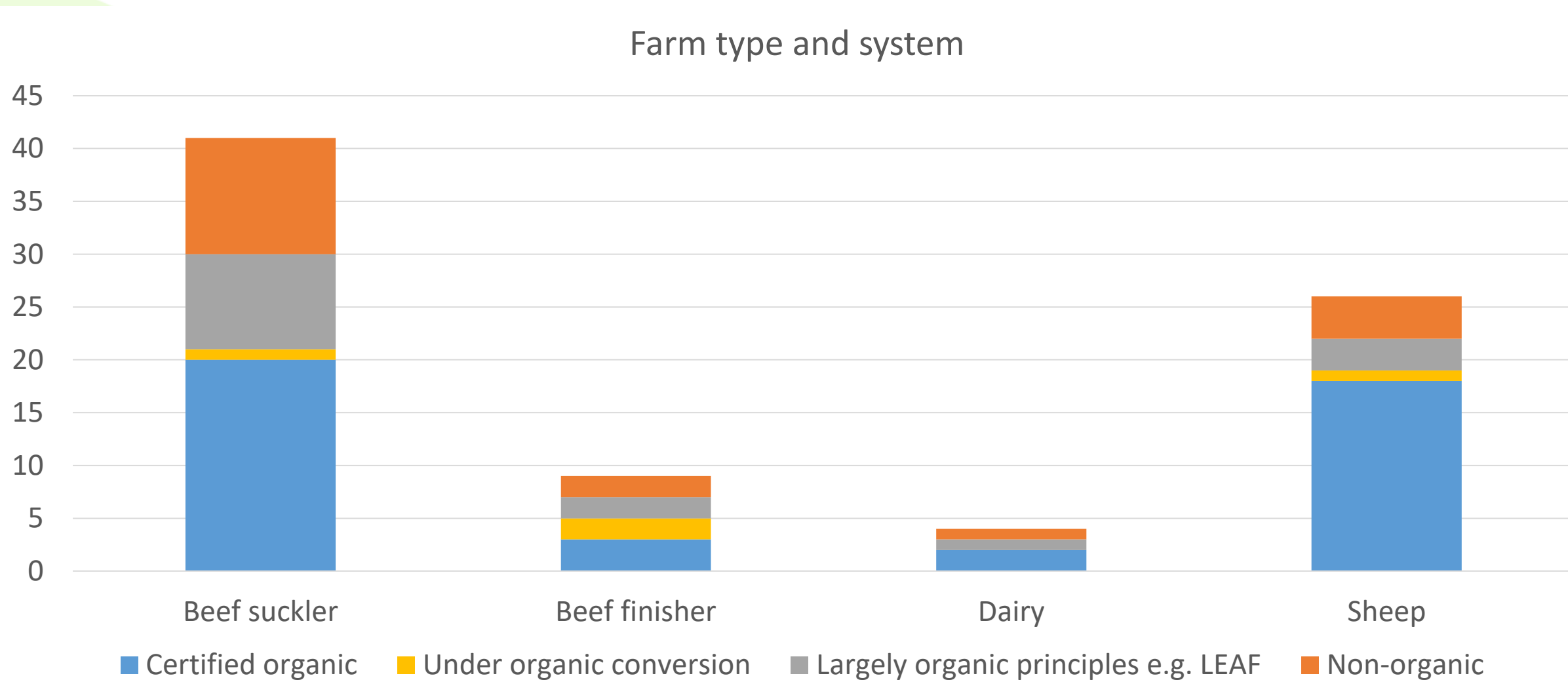
Leading the way in Agriculture and Rural Research, Education and Consulting

Introduction



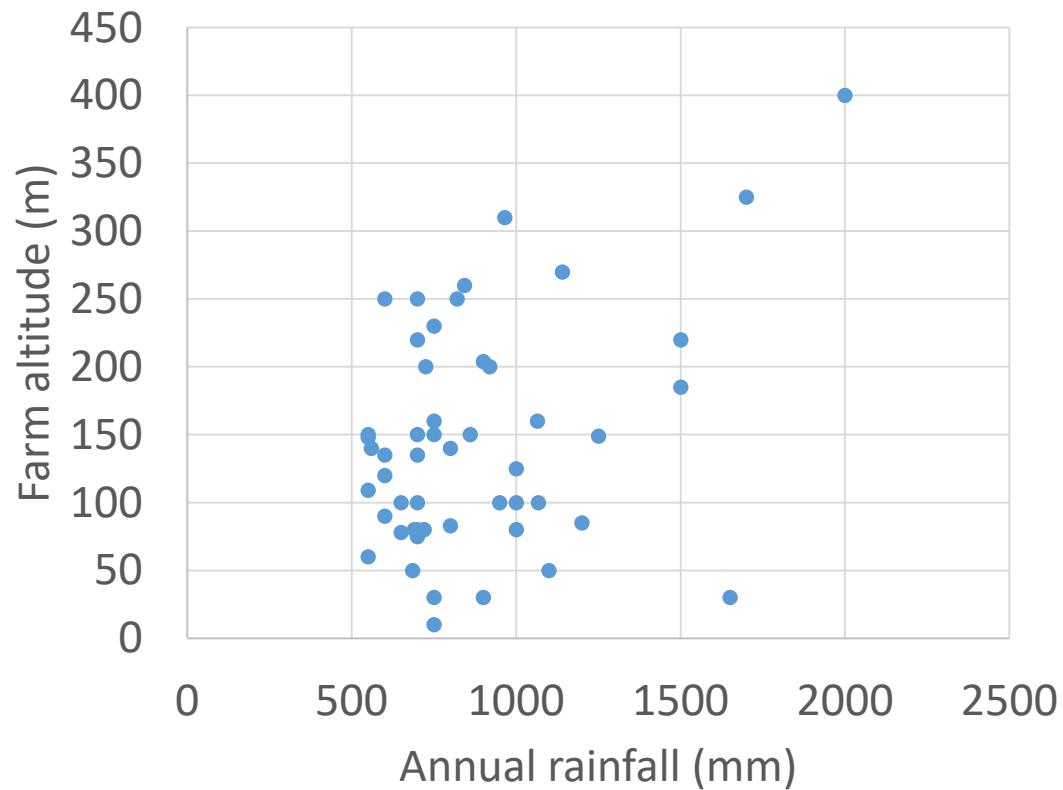
- Reporting on 56 farms that contributed to the PG Tool data collection
- Initial analysis of farm economic data to inform benchmarking analysis
- Comparison within PFLA sample
- Comparison against FBS sample

Farm types and systems

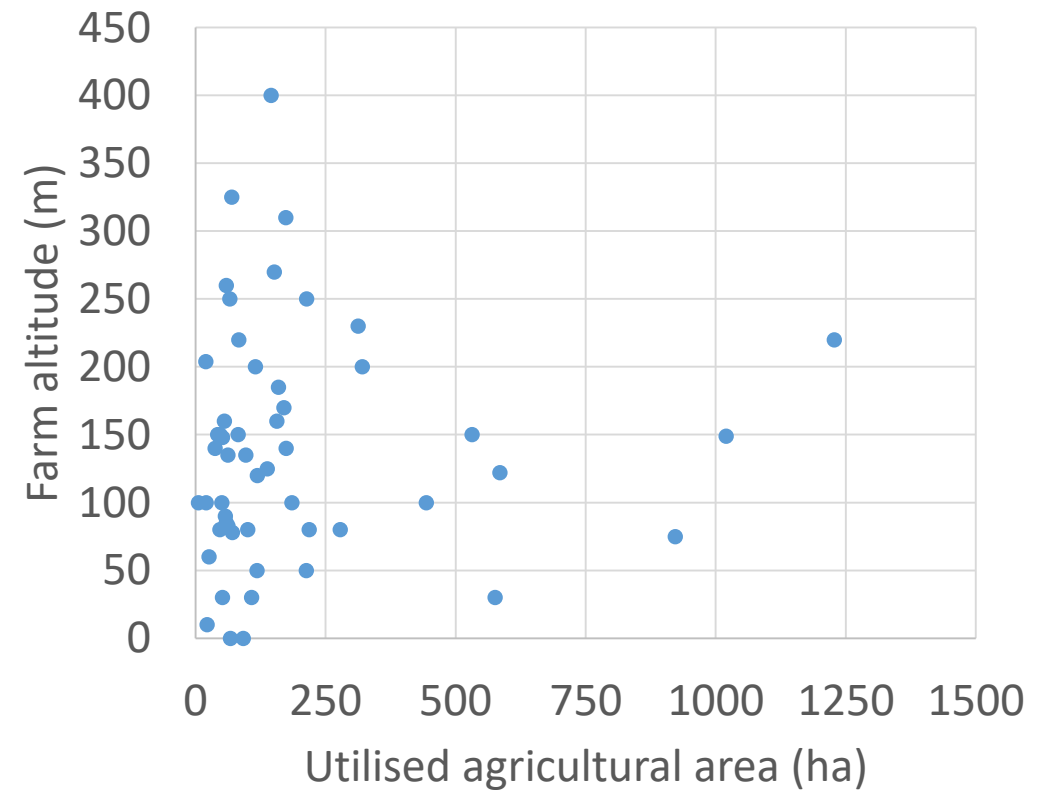


Farm characteristics

Rainfall and altitude



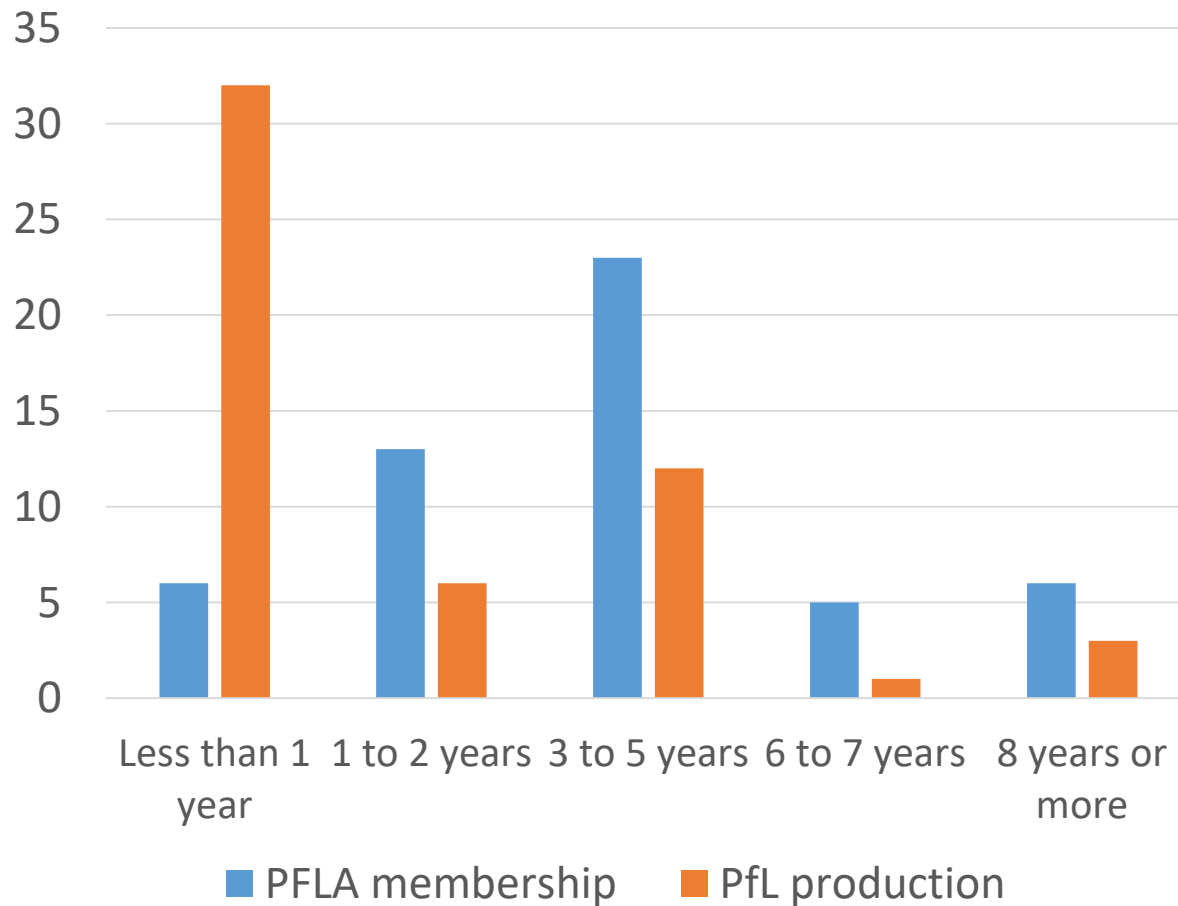
Total UAA and farm altitude



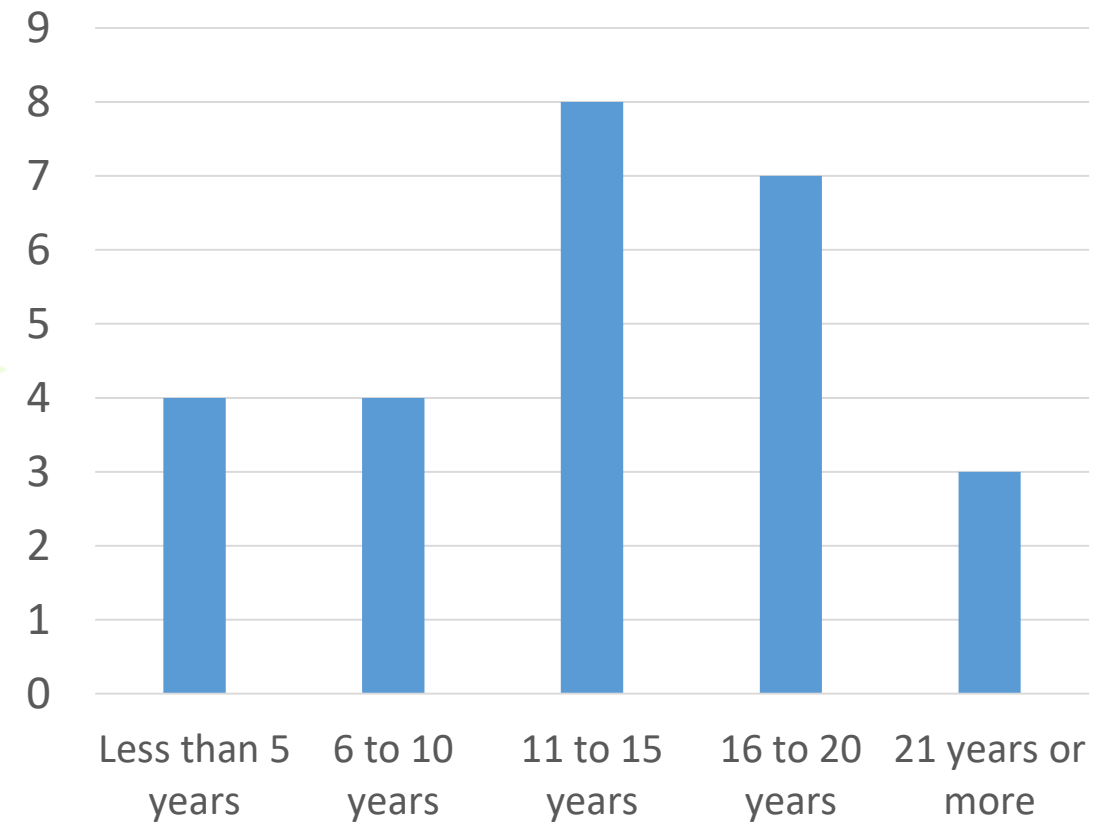
PFLA membership and certification



PFLA membership vs certification



Years organic



Beef suckler

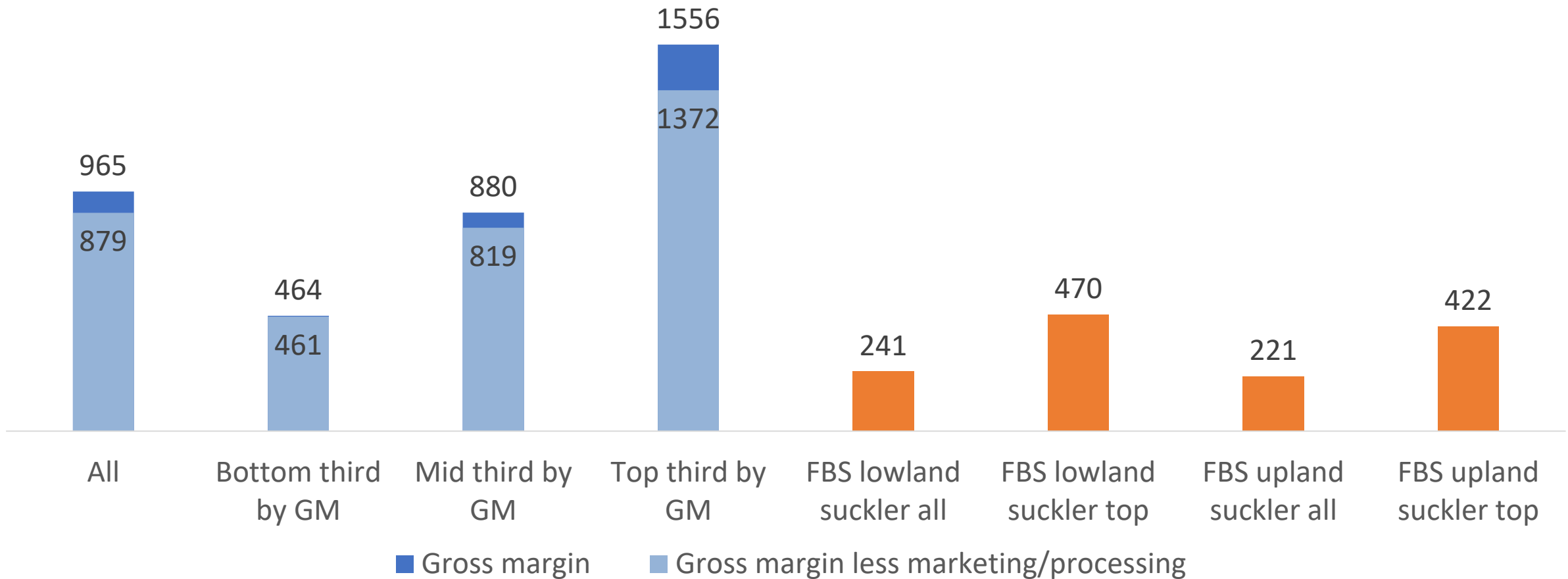


- 38 farms have a beef suckler enterprise
 - 1 has no output recorded in PG Tool
- 30 have other enterprises (sheep, arable, pigs)
- Farm size (forage area)
 - Mean: 163 ha
 - Range: 18 to 965 ha
- Livestock units range: 9 to 337
- Gross margin range: 0 to 3852 £/cow

Beef suckler– gross margin



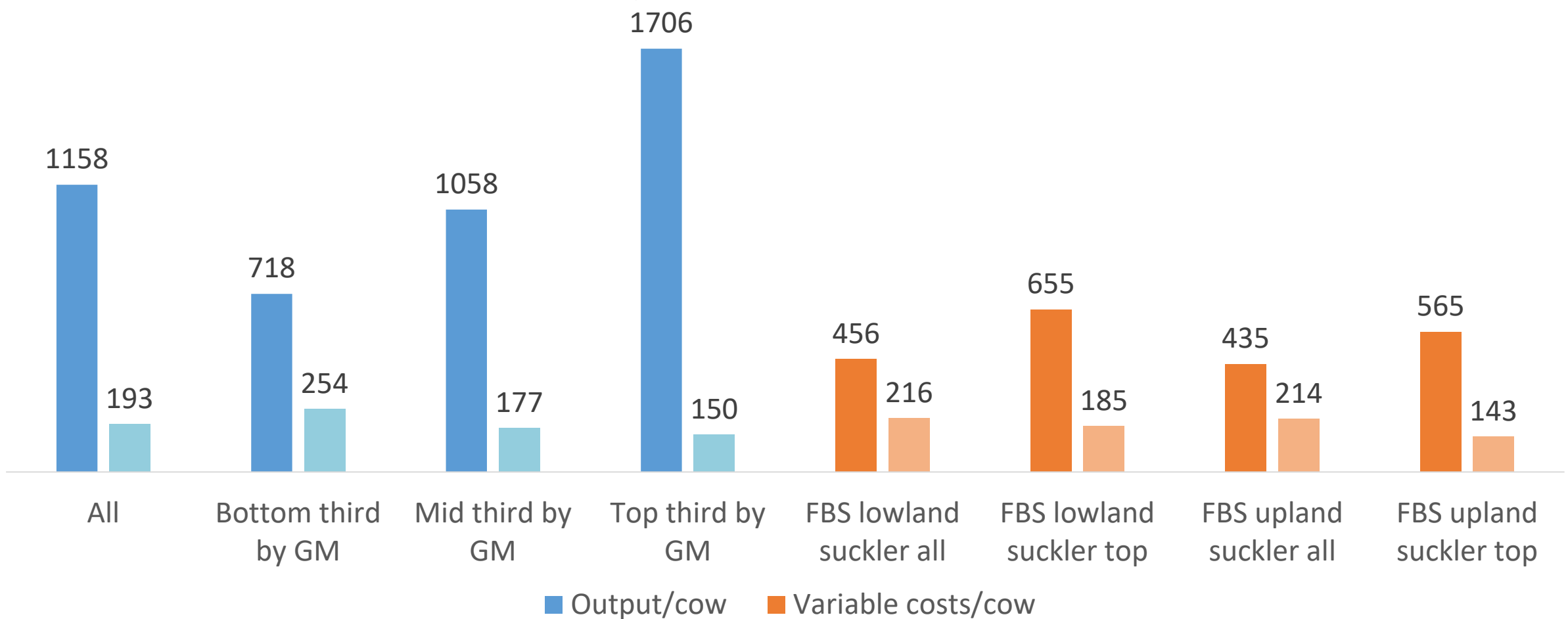
Beef - Gross margin (£/cow)



Beef suckler– output and variable costs



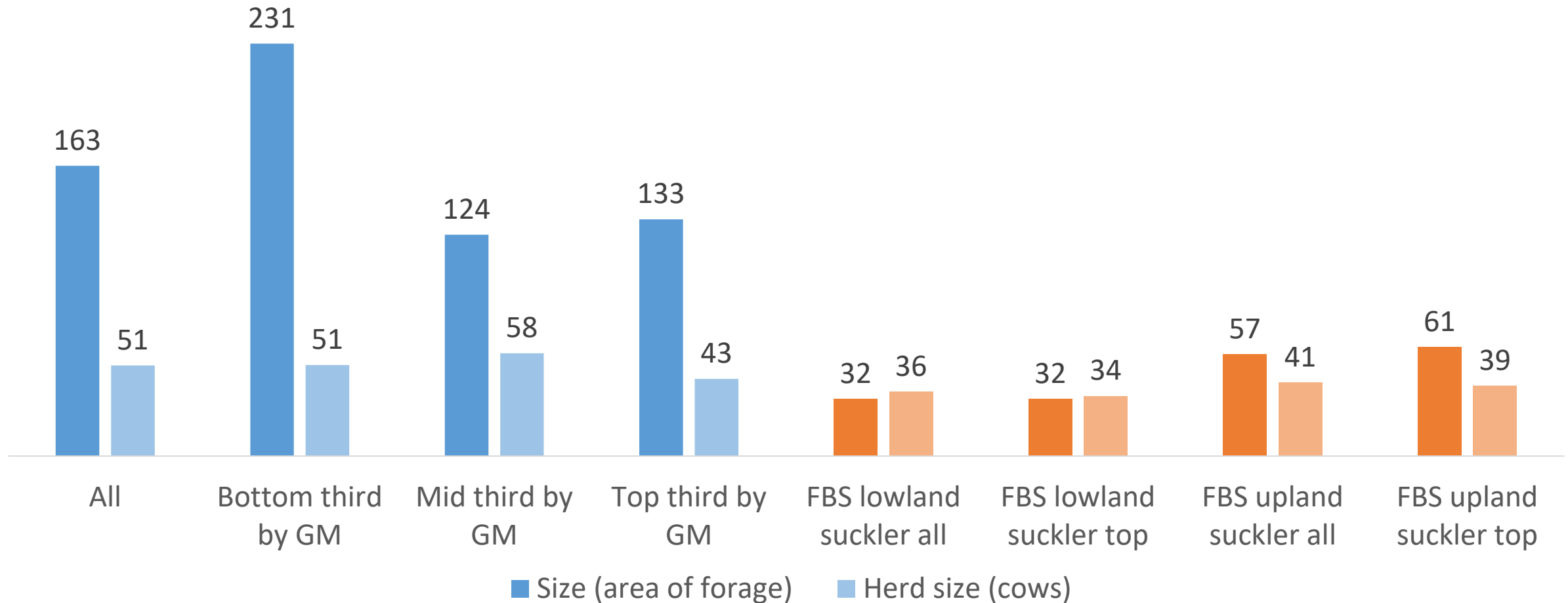
Beef - Output and variable costs (£/cow)



Beef suckler – farm size and livestock numbers



Beef - Forage area (ha) and number of cows



Sheep

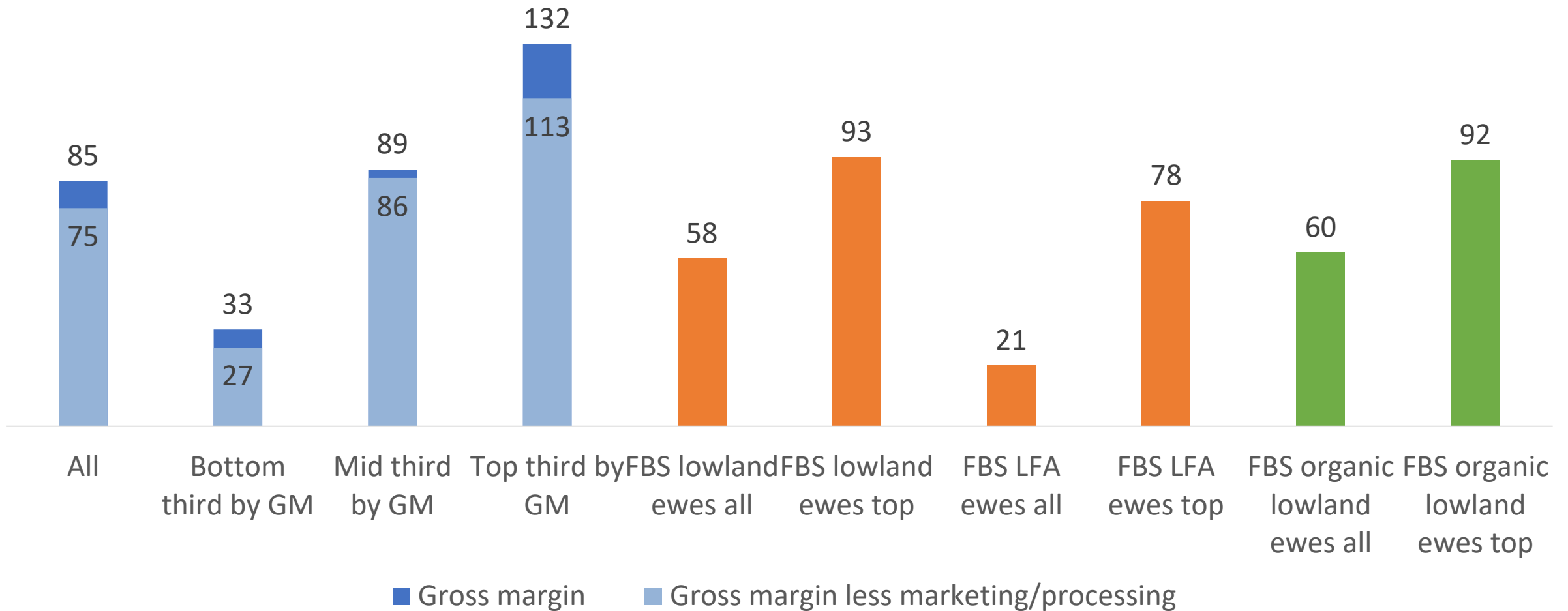


- 24 farms
 - 23 have other enterprises – mostly beef suckler
- Farm size (forage area)
 - Mean: 194 ha
 - Range: 19 to 965 ha
- Livestock units range: 1 to 1103
- Gross margin range: 8 to 184 £/ewe

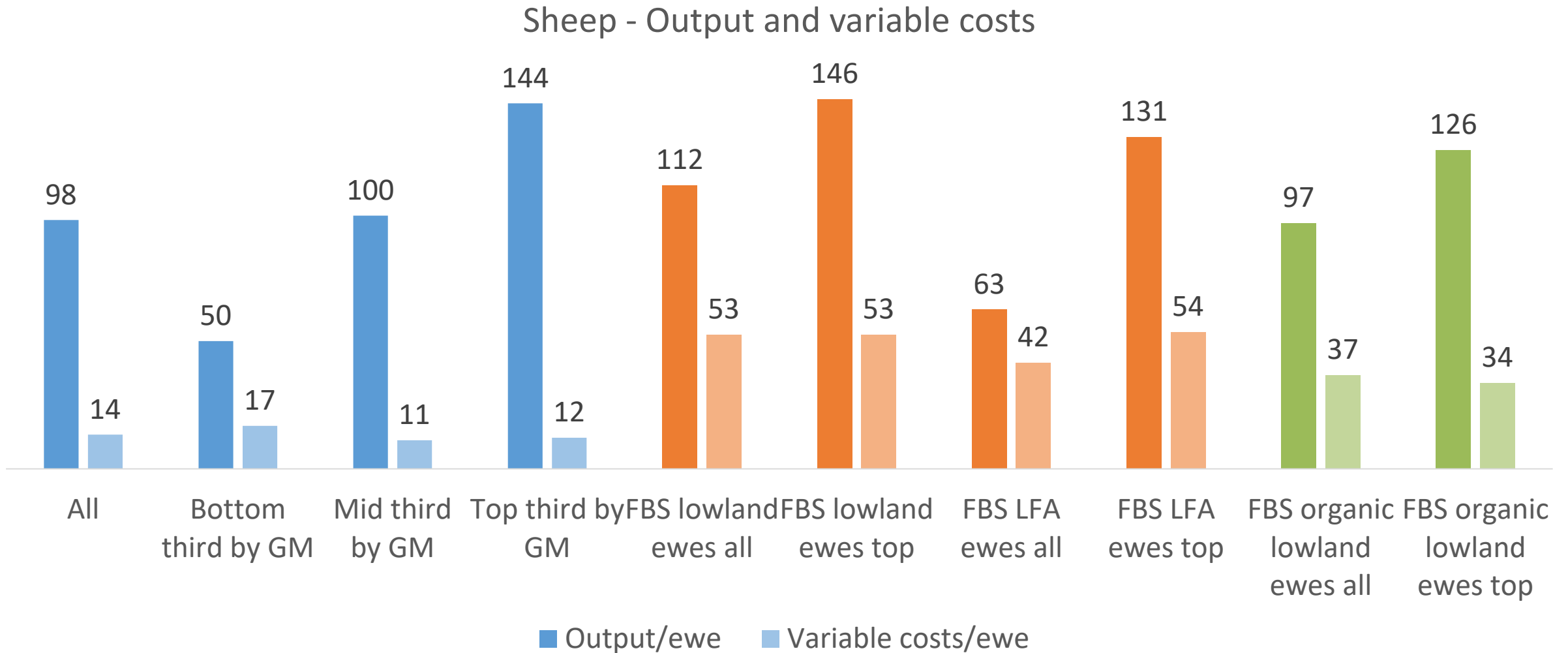
Sheep – gross margin



Sheep - Gross margin (£/ewe)



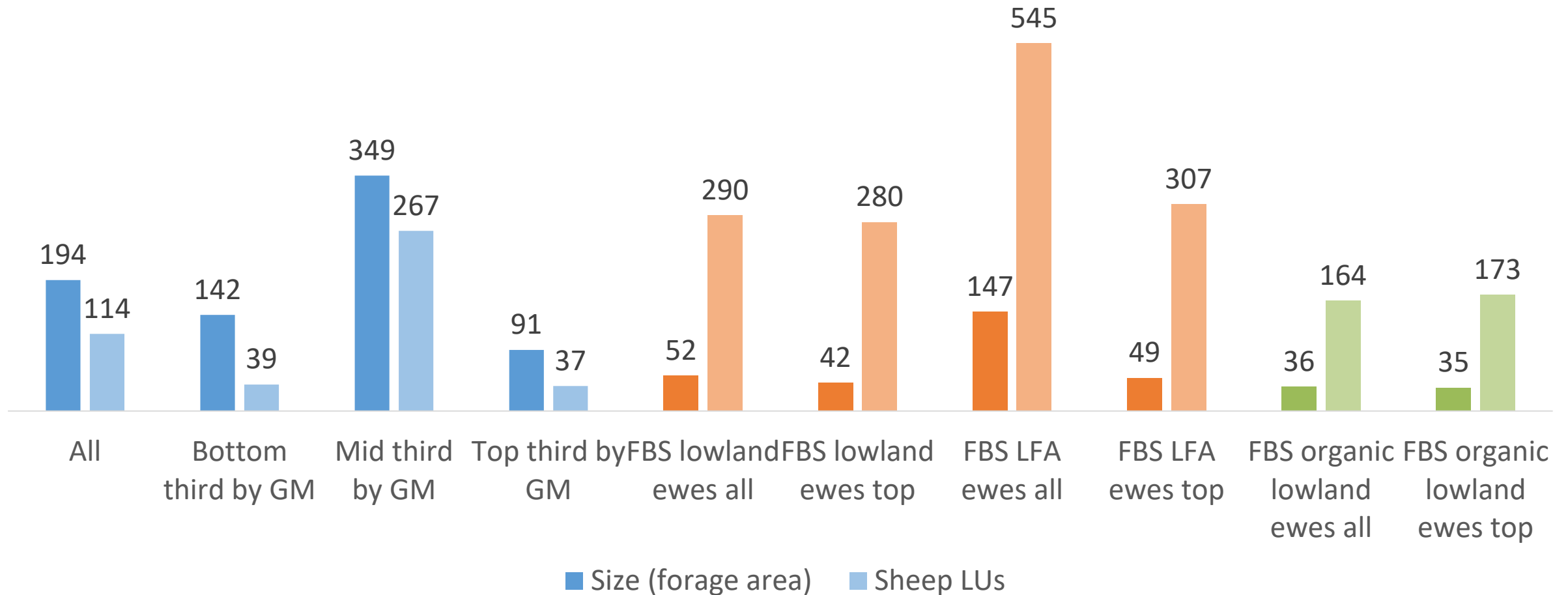
Sheep – output and variable costs



Sheep – farm size and livestock numbers



Sheep - Farm size (ha) and livestock numbers (Pfl ewes, FBS ewes & shearlings)



Dairy

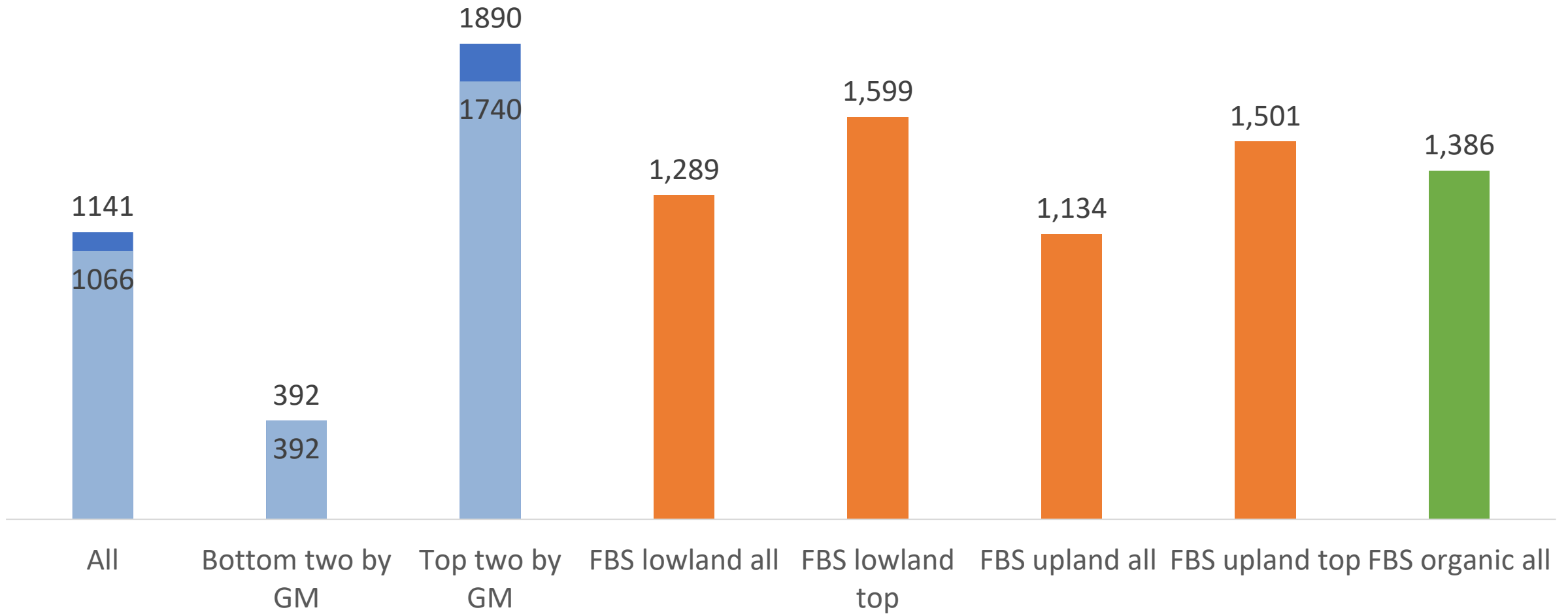


- 4 dairy farms
 - 3 also have beef finishing, 1 has beef suckler
- Farm size (forage area)
 - Mean: 72 ha
 - Range: 38 to 137 ha
- Livestock units range: 54 to 598
- Gross margin range: 137 to 2627 £/cow

Dairy – gross margin

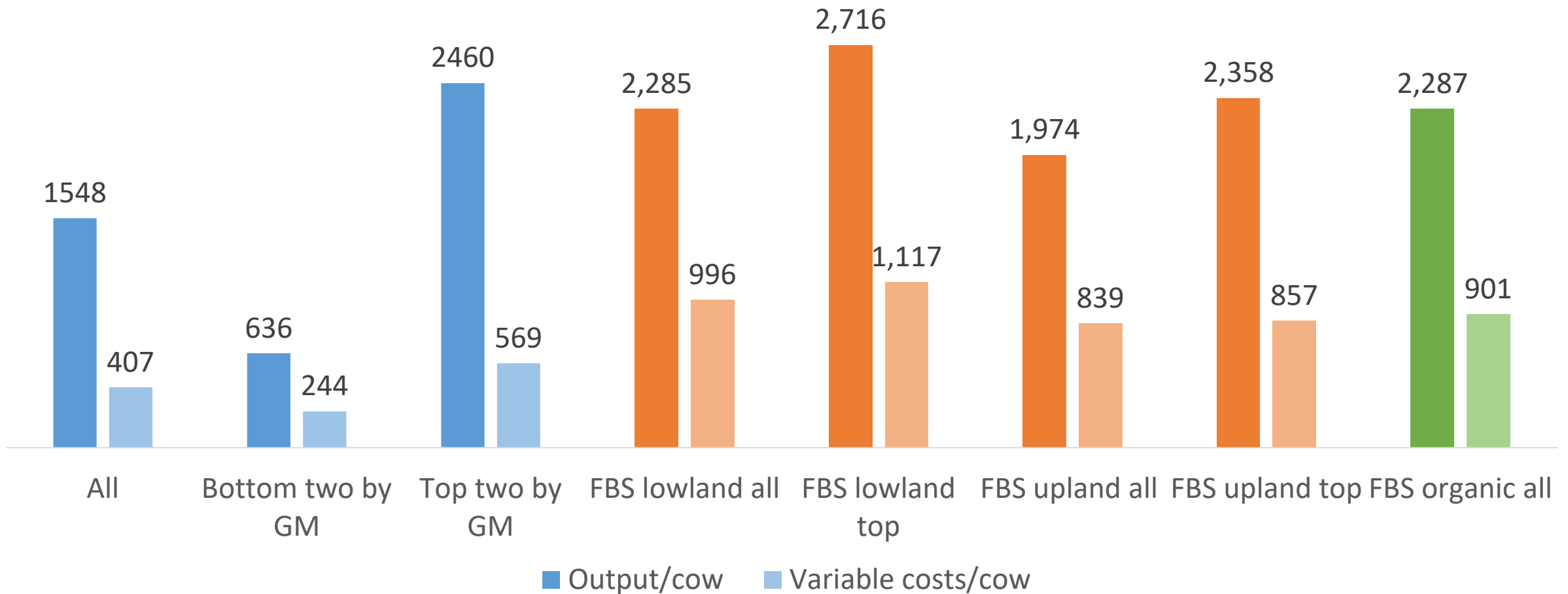


Dairy - Gross margin (£/cow)



Dairy – output and variable costs

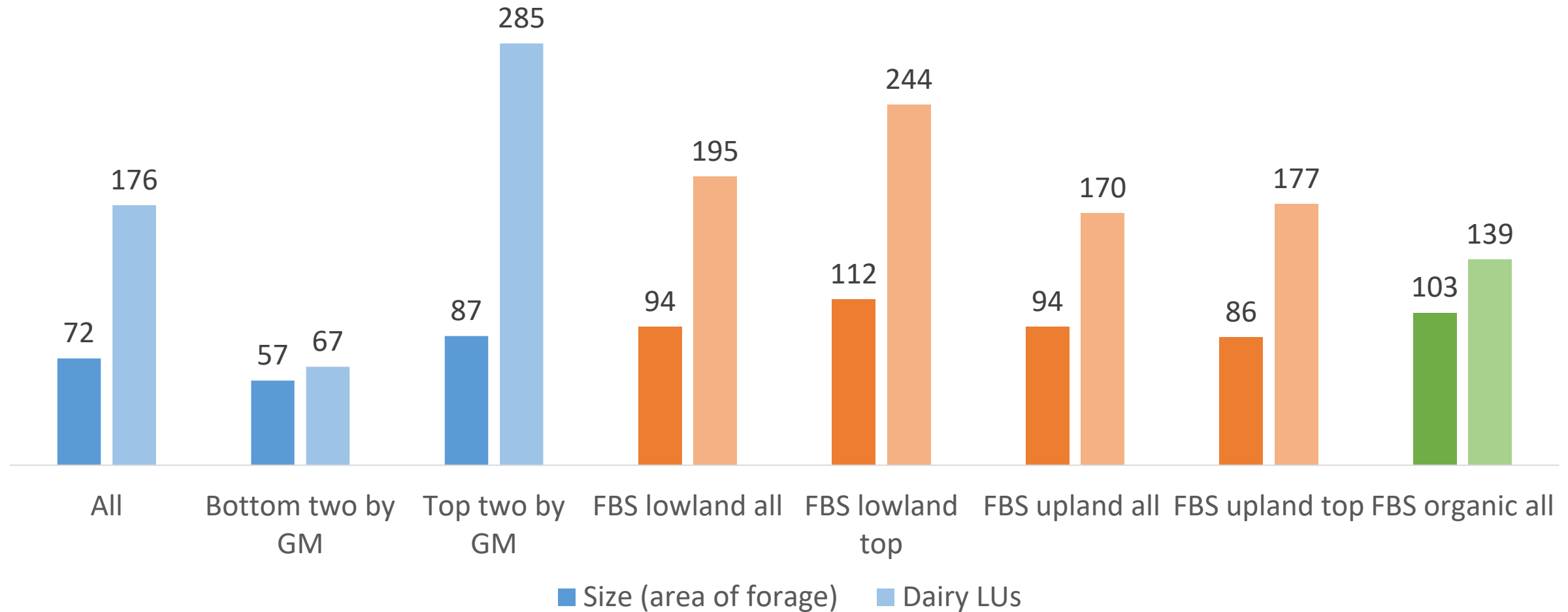
Dairy - Output and variable costs (£/head)



Dairy – farm size and livestock numbers



Dairy - Farm size (ha) and livestock units



Beef finisher

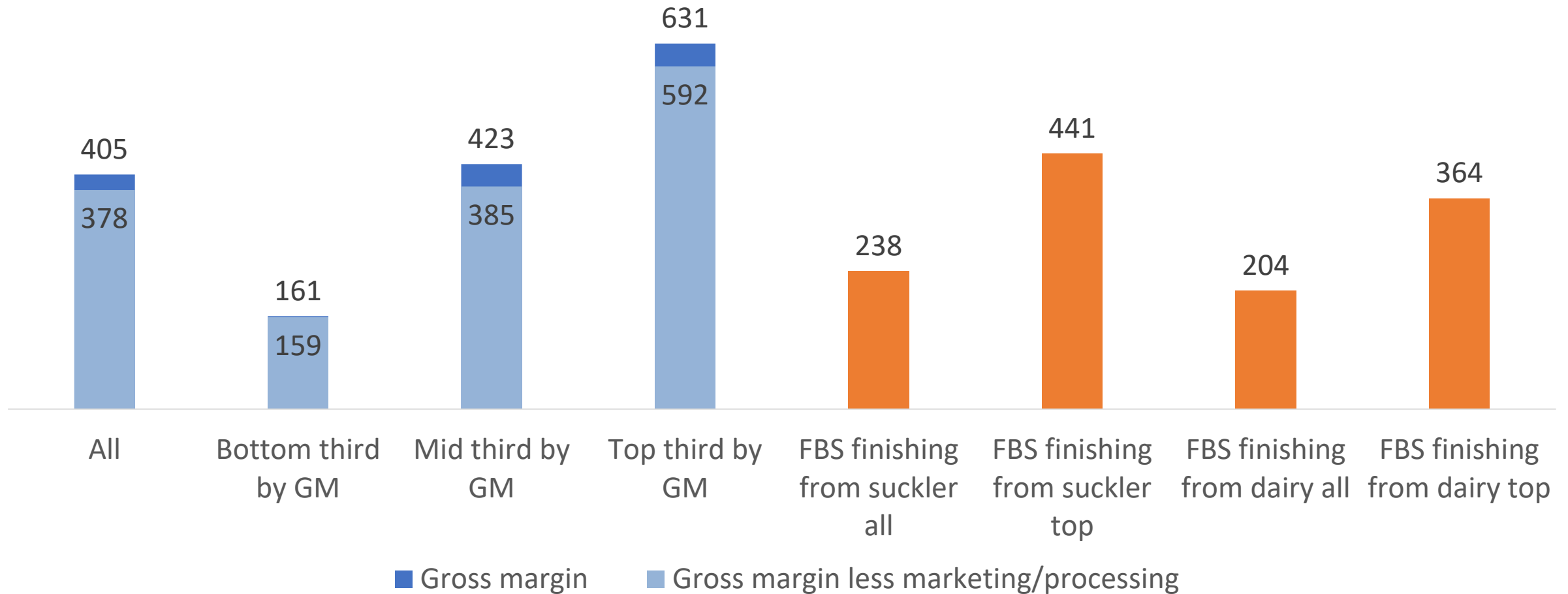


- 9 beef finishers
- Farm size (forage area)
 - Mean: 103 ha
 - Range: 20 to 444 ha
- Livestock units range: 3 to 495
- Gross margin range: 79 to 701 £/head

Beef finishing – gross margin



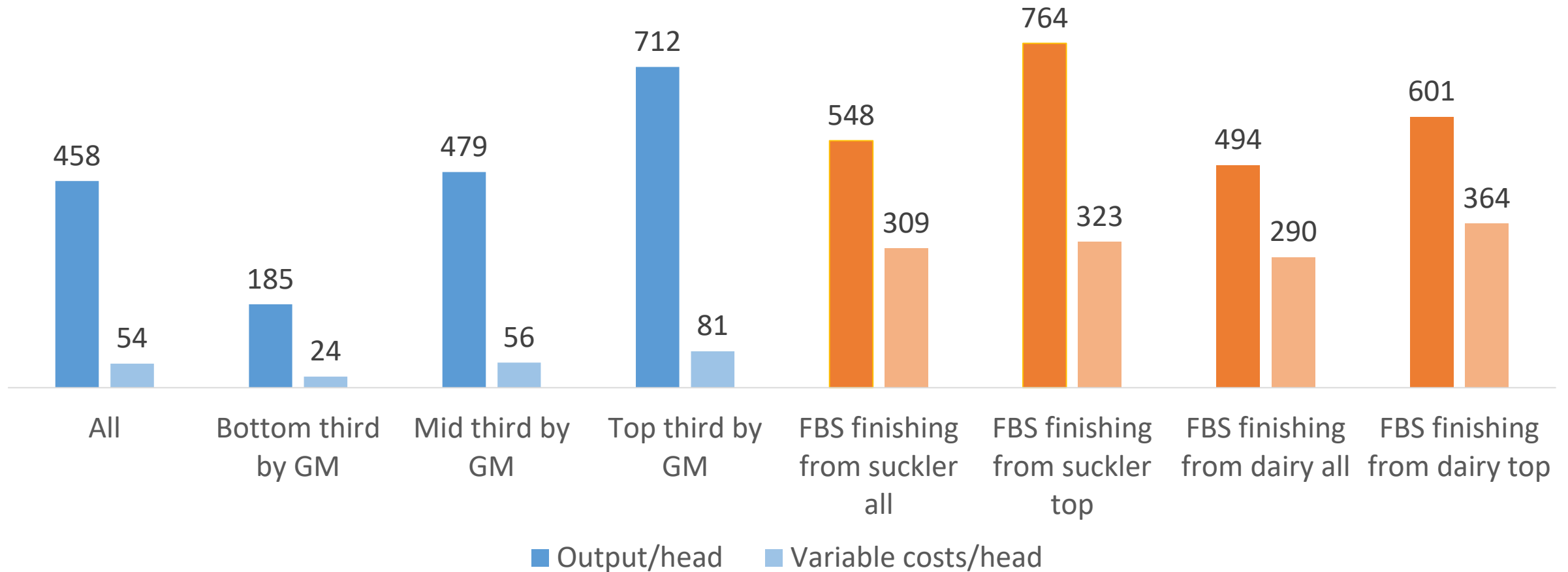
Beef finishing - Gross margin (£/head)



Beef finishing – output and variable costs



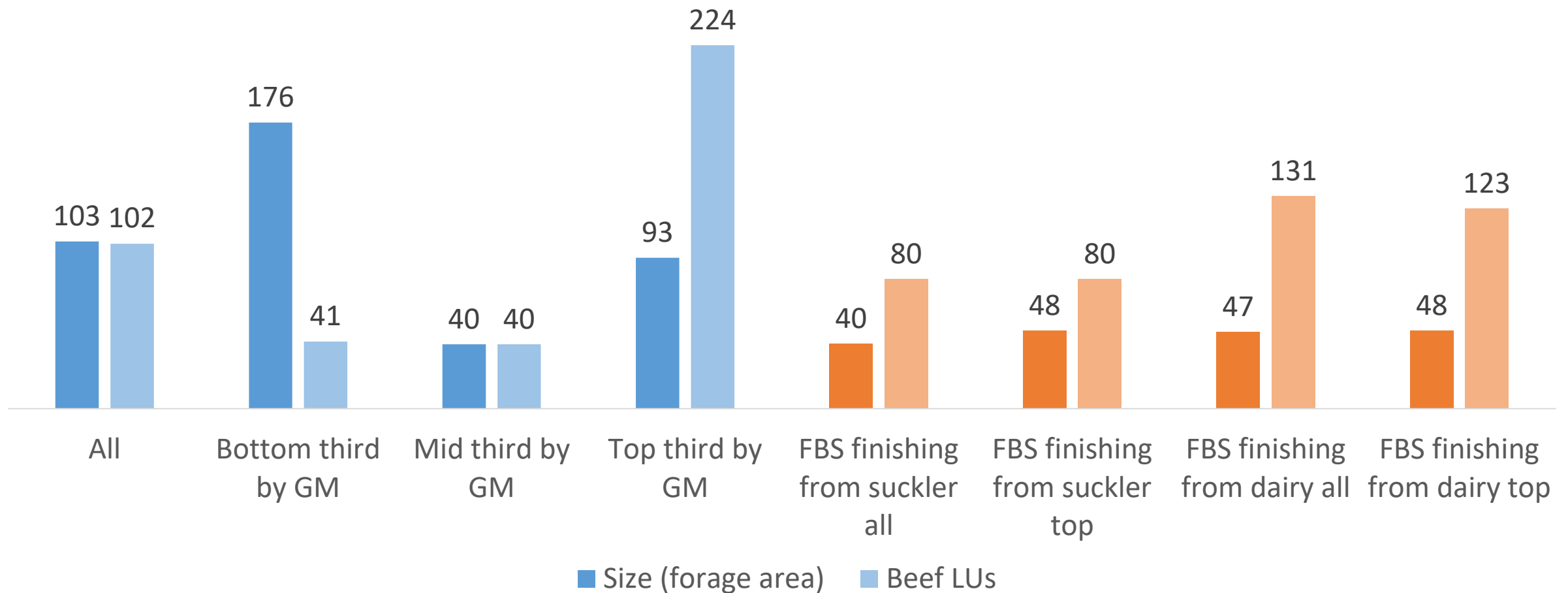
Beef finishing - Output and variable costs (£)



Beef finishing – farm size and livestock numbers



Beef finishing - Farm size (ha) and livestock units



Next steps



- Net margin analysis – difficult due to lack of enterprise level fixed costs
- Apportionment of forage area across livestock enterprises
- Comparison with industry wide benchmarks (e.g. AHDB, FBS)
- Interactions with environmental data – PG Tool, field sampling

Acknowledgements



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<https://www.foodsecurity.ac.uk/>

