

SUSTAINABILITY ASSESSMENT OF SPANISH SHEEP AND WELSH BEEF MIXED CROP-LIVESTOCK FARMING SYSTEMS

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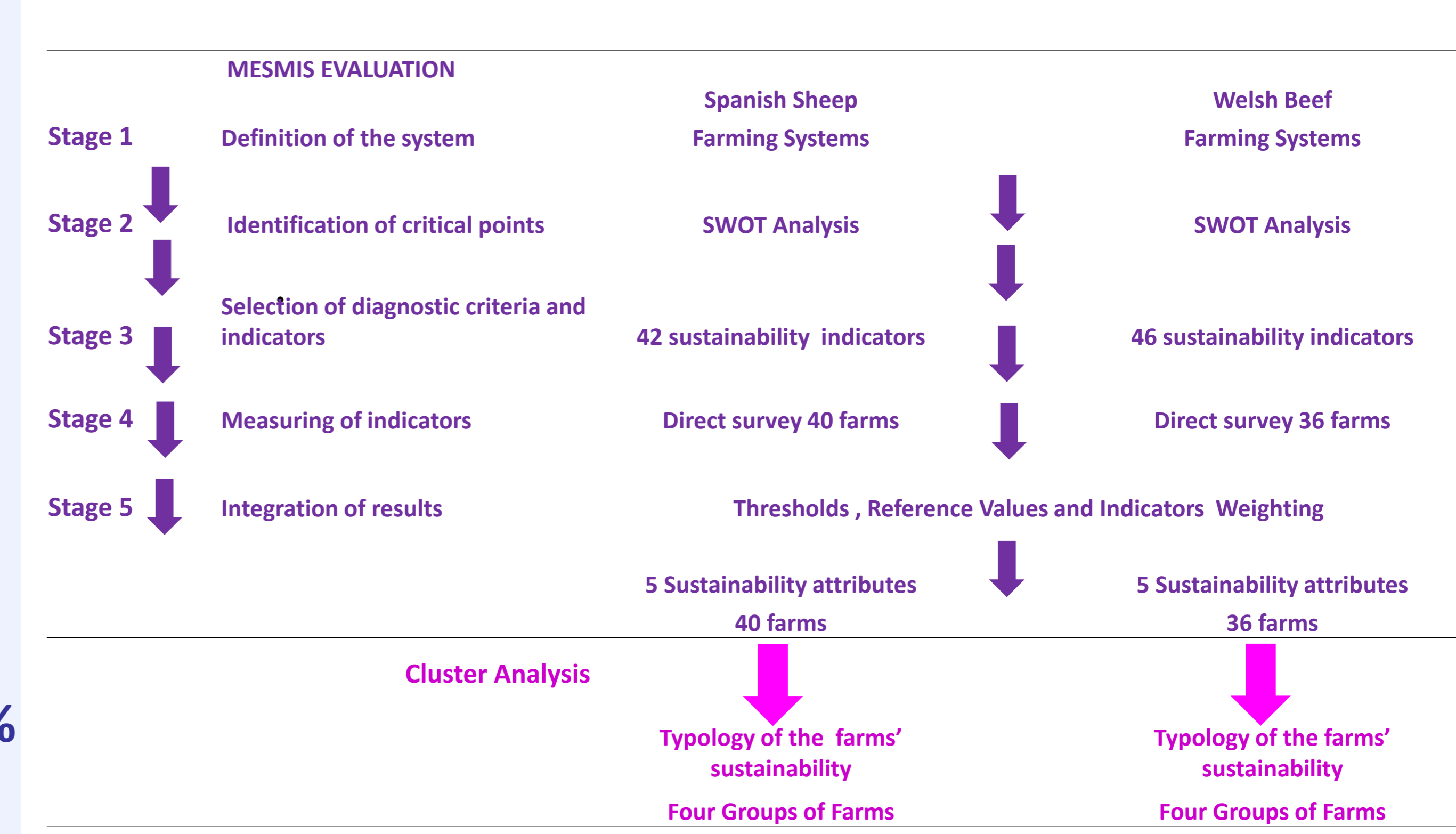


OBJECTIVE

To assess the sustainability of Spanish sheep and Welsh beef mixed crop-livestock farming systems

METHODOLOGY

Farm sustainability was evaluated using MESMIS framework. It relies on a systemic approach by the definition of five basic sustainability attributes: (a) Productivity (capacity to provide the required level of goods and services); (b) Stability (the ability of the system to cope with change); (c) Adaptability (the ability to find new levels of balance or to continue offering benefits to long-term changes in the environment); (d) Equity (the ability to distribute both intra- and intergenerational benefits and costs fairly); (e) Self-reliance (the ability to regulate and control interactions with the outside).



Oviaragón

General characteristics of Spanish and Welsh farms sample

	Sheep farming systems			Beef farming systems		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Altitude (m)	613	145	1,304	167	30	480
Annual rainfall (mm)	514	308	1,104	1,388	889	2
Utilised Agricultural Area (UAA) (ha)	115	20	457	222	28	931
% Rainfed area/UAA	88	0	100			
% Cereals/UAA	30	0	89	3	0	22
% Forage crops /UAA	30	0	100	87 ^a	33 ^a	100 ^a
% Permanent crops/ UAA	5	0	56			
% Own area/Total land Area	45	0	100	78	9	100
Total Annual Working Unit (AWU)	1.88	1.00	4.00	2.5	1.0	8.0
% Family AWU/ Total AWU	92.6	50.0	100.0	87	50	100
Total Livestock Units	103 ^b	40 ^b	230 ^b	276	38	1220

Meat sheep farming systems associated to cash crops, mainly cereals

Beef farming systems (and sheep) associated to crops, mostly fodder crops and 40% farms cultivated cereals

RESULTS

Values obtained for the highest weighed indicators per attribute in Spanish mixed sheep farming systems

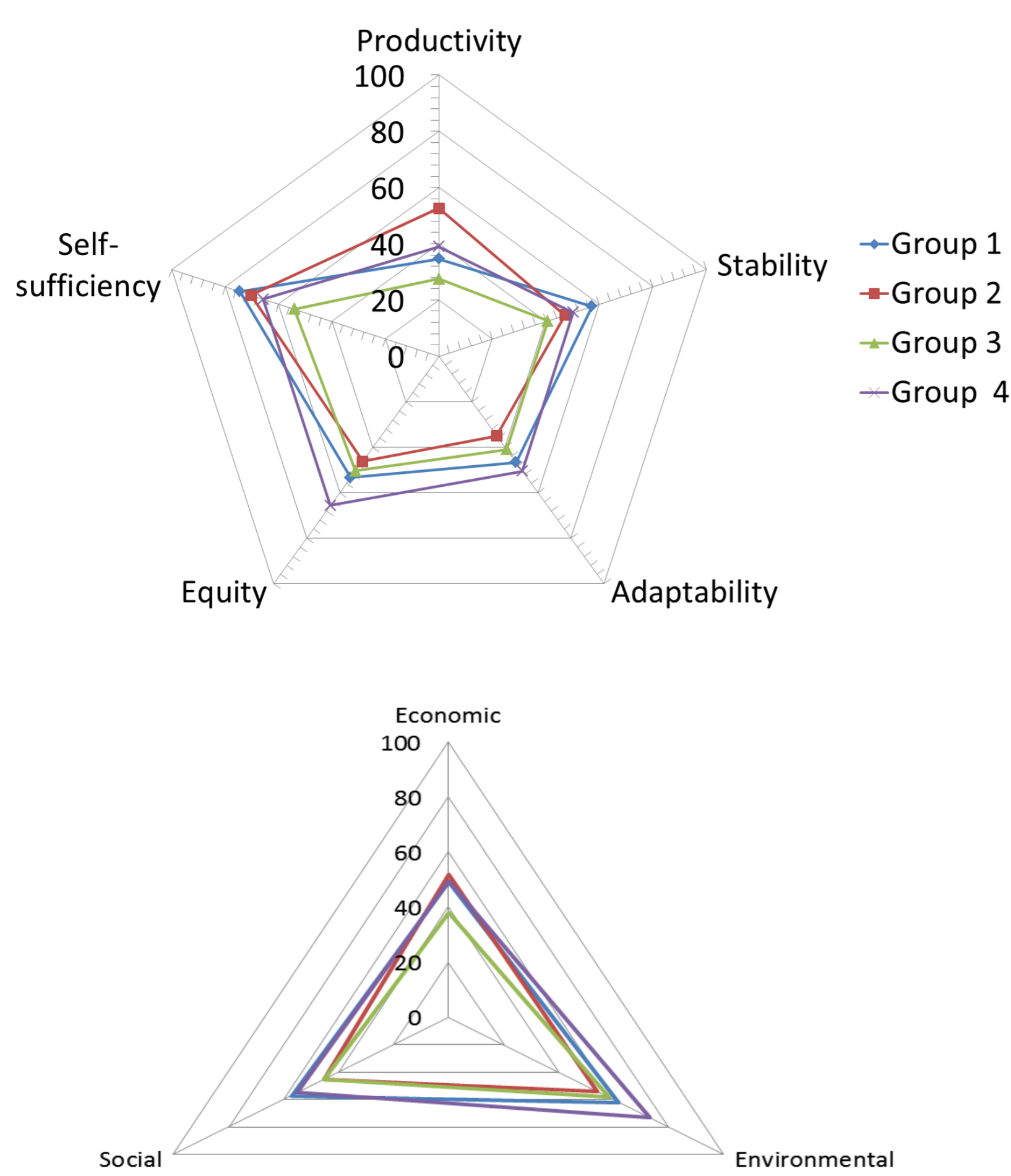
Attribute	No. Farms	Group 1	Group 2	Group 3	Group 4
		More self-sufficiency and stability	Best productivity and worst equity and adaptability	Less sustainable	Best equity and high adaptability
Productivity	18		8	6	8
Stability					
Adaptability					
Equity					
Self-reliance					

Values obtained for the highest weighed indicators per attribute in Welsh beef farming systems

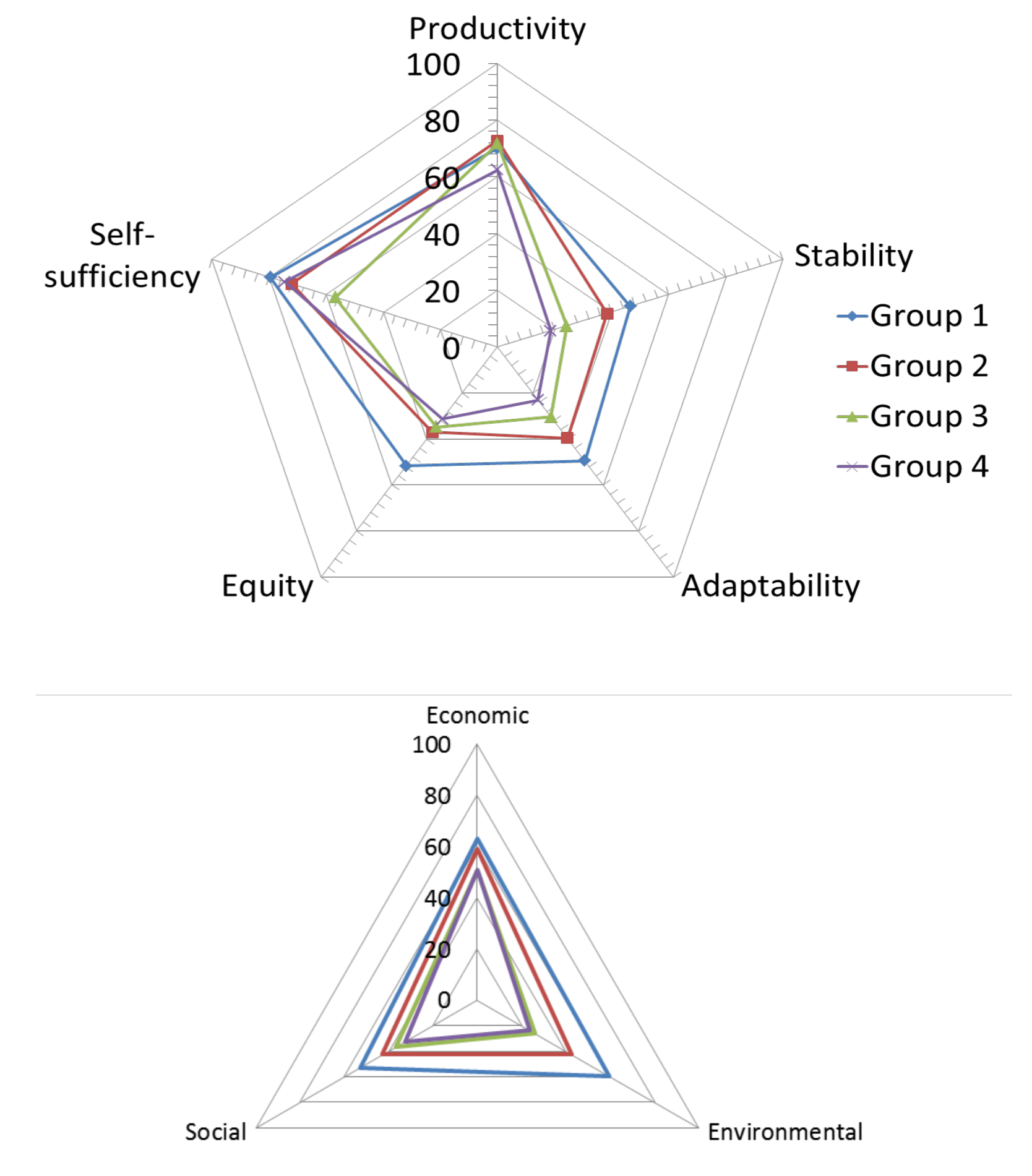
Attribute	No. Farms	Group 1	Group 2	Group 3	Group 4
		Highest equity	Best productivity	Least self-sufficient	Least stability and adaptability
Productivity	10		10	8	8
Stability					
Adaptability					
Equity					
Self-reliance					



Scores obtained for sustainability attributes and sustainability pillars in farm groups of Spanish mixed sheep farming systems



Scores obtained for sustainability attributes and sustainability pillars in farm groups of Welsh beef farming systems



CONCLUDING REMARKS

- Mixed sheep farms presented higher levels of self-sufficiency and equity than productivity. In terms of sustainability pillars, the social and economic sustainability was lower than environmental sustainability.
- Beef farming systems obtained higher scores in self-sufficiency and productivity than in the other sustainability attributes. These farms scored lower for social than economic and environmental sustainability.
- Mixed farming systems analysed could be more environmentally than socially and economically sustainable.
- Groups of farms that obtained highest productivity were less environmentally sustainable. But to achieve higher social and environmental sustainability did not involve lower economic sustainability, i.e. productivity or self-sufficiency mainly.