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Quick sustainability scan calculator for intensive and extensive pig farms



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"This project has received funding from the European Union's Horizon 2020 Research And Innovation programme under Grant Agreement No 101000344".



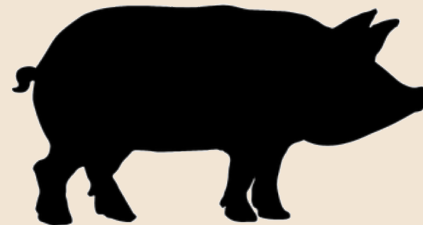
EAAP
European Federation
of Animal Science

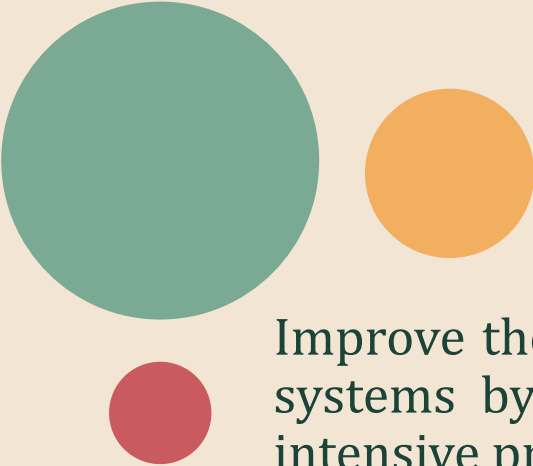


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Main objectives

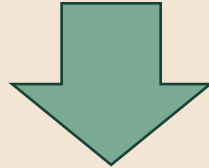
1. Develop techniques to assess pig production sustainability.
2. Improve sustainability through best practices.
3. Evaluate environmental, social, and economic impacts of pig production.





Specific objectives

Improve the quality of pork from conventional and organic farming systems by understanding how it is affected by extensive versus intensive production factors on-farm.



Development of quick sustainability scan calculators for intensive and extensive pig farms.

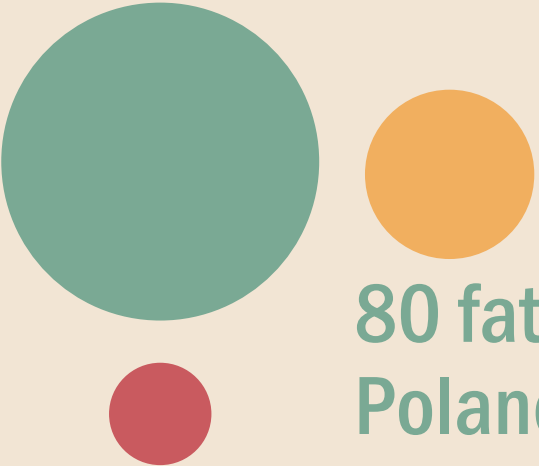


Quick sustainability scan calculator

Propose an evaluation scheme to obtaining an individual farm score trough the evaluation of different aspects related to livestock management



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80 fattening pig farms from Denmark, Italy,
Poland and Spain



Min: 20 farms per country



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2 Quick sustainability scan calculators

Extensive : 10 topics with a total of 81 questions

Intensive : 8 topics with a total of 86 questions



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These two topics are only evaluated for extensive farms

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LIVESTOCK
MANAGEMENT
TOPICS

1. Certifications

2. Water
management

3. Feed

4. Waste and
residues
management

5. Energy
efficiency

6. Socio-economic
contribution to
the farm territory

8. Animal
management

7. Farm
associated
businesses

10. Stocking rate
and pig density

9. Management of
pastures and soil,
and biodiversity



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Methodology



Each topic receives a score according to its importance (agreed by experts) and contributes in a different proportion to a final score, which is organized into 3 categories.

I. ENVIRONMENTAL IMPACT

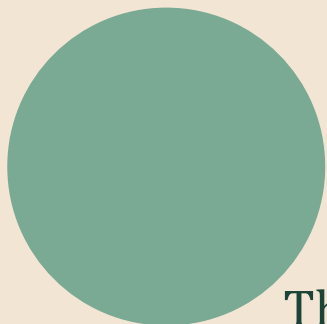
II. SOCIAL IMPACT

III. ECONOMIC IMPACT

Maximum achievable score in each category is **100 points**

Easy to fill out : answer = yes/no





Methodology

The questionnaire is based on the application of best management practices



Ej:

There is a savings plan for water (drinking and cleaning water)

There is a register of water consumption

The feed contains syntetic aminoacids

The feed contains phytases

There is an optimal thermal insulation or isolation

There is natural ventilation or a combined system

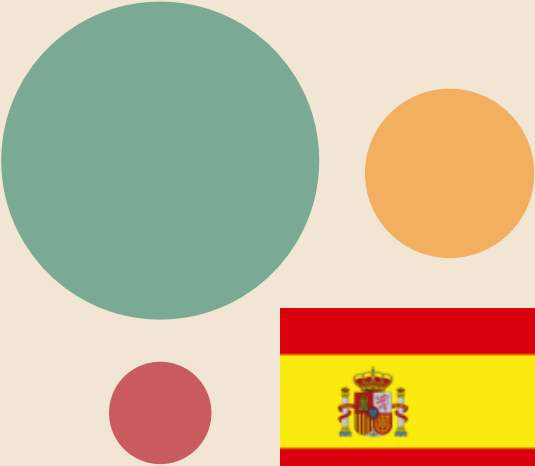
They make direct sales (associated with consumer groups, local businesses: catering, butchers, shops, etc.)

They sell via short chains: Km "O"

There is product transformation (including tolling agreement)



Preliminary Results



Spain = 20 farms → 19 extensive + 1 intensive



Poland = 21 farms → 20 intensive + 1 extensive



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A. Intensive Farms (20PL + 1 ES)



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A. Intensive Farms (20PL + 1 ES)

		Certifications	Water management	Feed	Energy efficiency	Socio-economic contribution to the territory	Farm associated business	Animal management	Waste and residues management	Total score
Mean		0,00	6,27	5,42	4,20	7,00	3,62	7,37	4,12	39,78
SD		0,00	1,39	1,07	1,92	1,58	2,65	1,01	1,06	4,92
Min		0,00	1,58	2,97	0,00	3,00	0,00	5,71	1,50	29,49
Max		0,00	8,42	7,22	8,30	9,00	8,00	9,05	6,50	46,52
Percentils	25	0,00	6,32	4,82	3,00	6,50	1,00	6,90	3,50	36,61
	50	0,00	6,32	5,62	4,00	7,00	4,00	7,62	4,50	40,65
	75	0,00	6,58	6,24	5,10	8,00	5,00	7,86	4,75	44,23



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A. Intensive Farms (20PL + 1 ES)

		Certifications	Water management	Feed	Energy efficiency	Socio-economic contribution to the territory	Farm associated business	Animal management	Waste and residues management	Total score	Environmental impact	Social impact	Economic impact
Mean		0,00	6,27	5,42	4,20	7,00	3,62	7,37	4,12	39,78	46,93	43,30	48,03
SD		0,00	1,39	1,07	1,92	1,58	2,65	1,01	1,06	4,92	6,43	9,56	7,05
Min		0,00	1,58	2,97	0,00	3,00	0,00	5,71	1,50	29,49	35,21	20,00	35,23
Max		0,00	8,42	7,22	8,30	9,00	8,00	9,05	6,50	46,52	60,09	68,42	61,49
Percentils	25	0,00	6,32	4,82	3,00	6,50	1,00	6,90	3,50	36,61	42,26	37,98	42,44
	50	0,00	6,32	5,62	4,00	7,00	4,00	7,62	4,50	40,65	47,38	43,39	48,24
	75	0,00	6,58	6,24	5,10	8,00	5,00	7,86	4,75	44,23	50,43	48,63	52,82



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	50	0,00	6,32	5,62	4,00	7,00	4,00	7,62	4,50	40,65	47,38	43,39	48,24
	75	0,00	6,58	6,24	5,10	8,00	5,00	7,86	4,75	44,23	50,43	48,63	52,82



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A. Intensive Farm

Ideal farm
Total score: 100
Environmental impact score: 100
Social impact score: 100
Economic impact score: 100

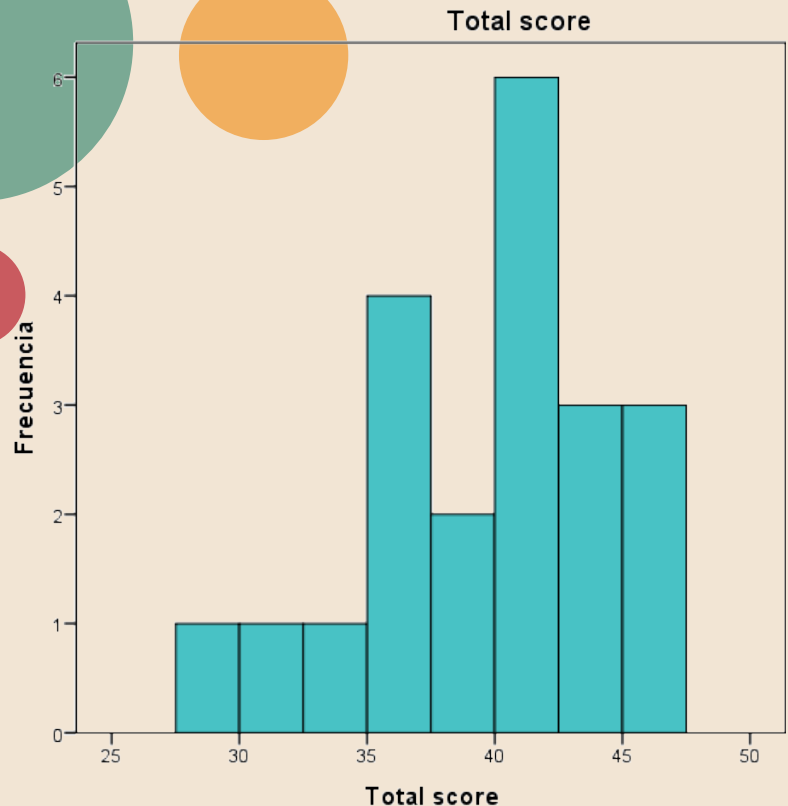
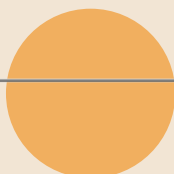
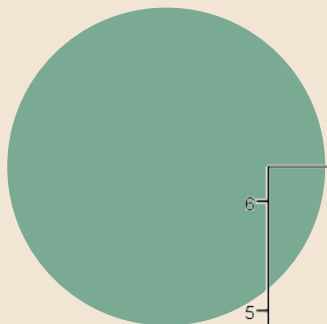
		Certifications	Management	Ideal 100						Total score	Environmental impact	Social impact	Economic impact
		Total score: 100 Environmental impact score: 100 Social impact score: 100 Economic impact score: 100											
Mean		8,00	6,32	5,62	3,00	7,37	4,12	39,78	46,93	43,30	48,03		
SD		2,65	1,01	1,06	4,92	6,43	9,56	7,05					
Min		0,00	0,00	5,71	1,50	29,49	35,21	20,00	35,23				
Max		9,00	8,00	9,05	6,50	46,52	60,09	68,42	61,49				
Percentils	25	6,50	1,00	6,90	3,50	36,61	42,26	37,98	42,44				
	50	0,00	6,32	5,62	4,00	7,00	4,00	7,62	4,50	40,65	47,38	43,39	48,24
	75	0,00	6,58	6,24	5,10	8,00	5,00	7,86	4,75	44,23	50,43	48,63	52,82



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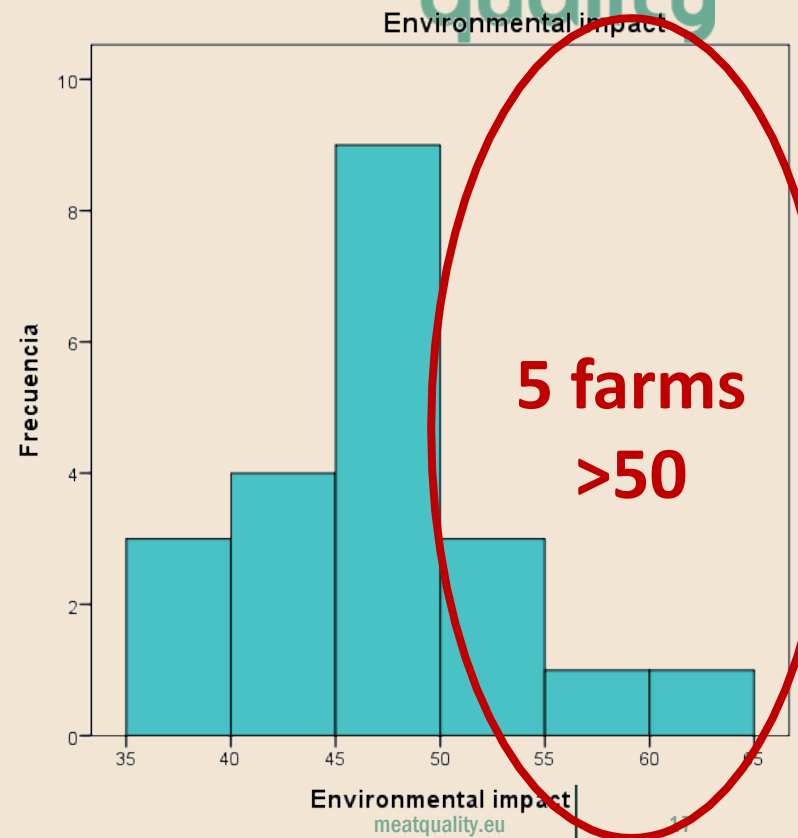
A. Intensive Farms (20PL + 1 ES)

		Certifications	Water management	Feed	Energy efficiency	Socio-economic contribution to the territory	Farm associated business	Animal management	Waste and residues management	Total score	Environmental impact	Social impact	Economic impact
Mean		0,00	6,27	5,42	4,20	7,00	3,62	7,37	4,12	39,78	46,93	43,30	48,03
SD		0,00	1,39	1,07	1,92	1,58	2,65	1,01	1,06	4,92	6,43	9,56	7,05
Min		0,00	1,58	2,97	0,00	3,00	0,00	5,71	1,50	29,49	35,21	20,00	35,23
Max		0,00	8,42	7,22	8,30	9,00	8,00	9,05	6,50	46,52	60,09	68,42	61,49
Percentils	25	0,00	6,32	4,82	3,00	6,50	1,00	6,90	3,50	36,61	42,26	37,98	42,44
	50	0,00	6,32	5,62	4,00	7,00	4,00	7,62	4,50	40,65	47,38	43,39	48,24
	75	0,00	6,58	6,24	5,10	8,00	5,00	7,86	4,75	44,23	50,43	48,63	52,82



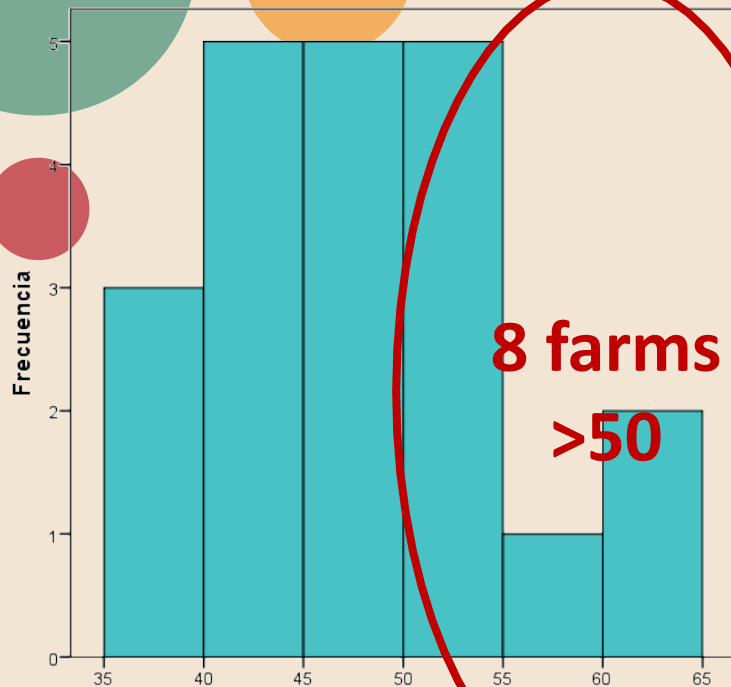
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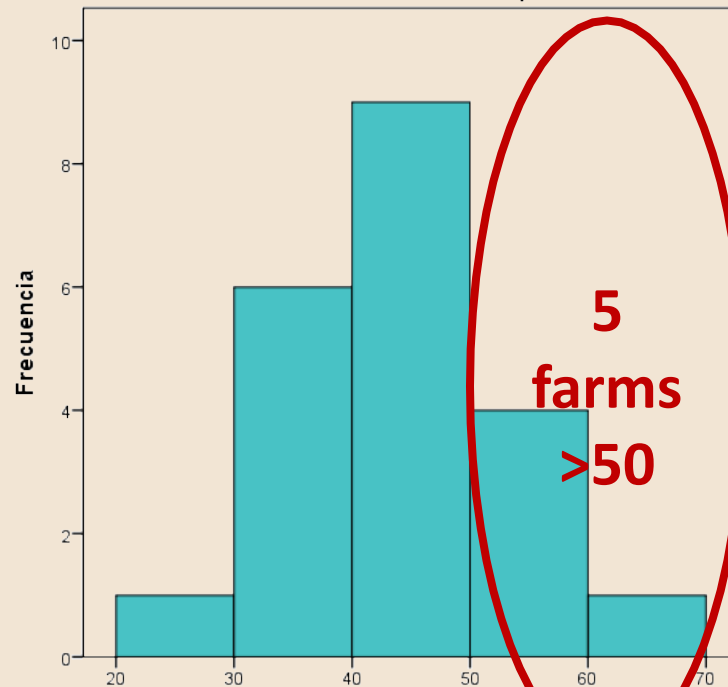


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Economic impact



Social impact



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B. Extensive Farms (19ES + 1 PL)

Mean grazing area:
ES = 125 ha
PL = 0,5 ha



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B. Extensive Farms (19ES + 1 PL)

		Certifications	Water management	Feed	Stocking density and grazing management	Energy efficiency	Socio-economic contribution to the territory	Farm associated business	Animal management	Pastures and soil management and biodiversity	Waste and residues management	Total score
Mean		1,88	7,36	8,78	8,09	5,45	7,45	2,70	5,26	7,15	5,19	61,14
SD		2,87	1,29	2,84	1,11	1,73	1,64	2,08	1,51	1,98	2,57	6,68
Min		0,00	3,89	4,00	5,60	0,00	5,00	1,00	2,38	1,00	0,00	42,50
Max		7,65	8,89	14,70	9,60	7,00	9,00	7,00	8,10	10,00	10,00	74,48
Percentils	25	0,00	6,67	7,48	7,80	5,00	6,00	1,00	4,76	6,00	4,06	57,14
	50	1,18	7,78	8,60	8,40	5,00	8,00	2,00	5,48	8,00	5,00	61,67
	75	1,18	7,78	10,20	8,60	7,00	9,00	3,00	5,71	8,00	6,25	64,27



B. Extensive Farms (19ES + 1 PL)

		Certifications	Water management	Feed	Stocking density and grazing management	Energy efficiency	Socio-economic contribution to the territory	Farm associated business	Animal management	Pastures and soil management and biodiversity	Waste and residues management	Total score	Environmental impact	Social impact	Economic impact
Mean		1,88	7,36	8,78	8,09	5,45	7,45	2,70	5,26	7,15	5,19	61,14	65,89	55,92	60,28
SD		2,87	1,29	2,84	1,11	1,73	1,64	2,08	1,51	1,98	2,57	6,68	7,87	9,51	5,89
Min		0,00	3,89	4,00	5,60	0,00	5,00	1,00	2,38	1,00	0,00	42,50	42,92	45,00	47,76
Max		7,65	8,89	14,70	9,60	7,00	9,00	7,00	8,10	10,00	10,00	74,48	78,51	82,96	72,95
Percentils	25	0,00	6,67	7,48	7,80	5,00	6,00	1,00	4,76	6,00	4,06	57,14	61,72	49,68	57,66
	50	1,18	7,78	8,60	8,40	5,00	8,00	2,00	5,48	8,00	5,00	61,67	67,34	54,07	59,45
	75	1,18	7,78	10,20	8,60	7,00	9,00	3,00	5,71	8,00	6,25	64,27	69,68	60,83	64,26



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B. Extensive Farms (19ES + 1 PL)

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Mean		1,88	7,36	8,78	8,09	5,45	7,45	2,70	5,26	7,15	5,19	61,14	65,89	55,92	60,28
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Min		0,00	3,89	4,00	5,60	0,00	5,00	1,00	2,38	1,00	0,00	42,50	42,92	45,00	47,76
Max		7,65	8,89	14,70	9,60	7,00	9,00	7,00	8,10	10,00	10,00	74,48	78,51	82,96	72,95
Percentils	25	0,00	6,67	7,48	7,80	5,00	6,00	1,00	4,76	6,00	4,06	57,14	61,72	49,68	57,66
	50	1,18	7,78	8,60	8,40	5,00	8,00	2,00	5,48	8,00	5,00	61,67	67,34	54,07	59,45
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B. Extensive F

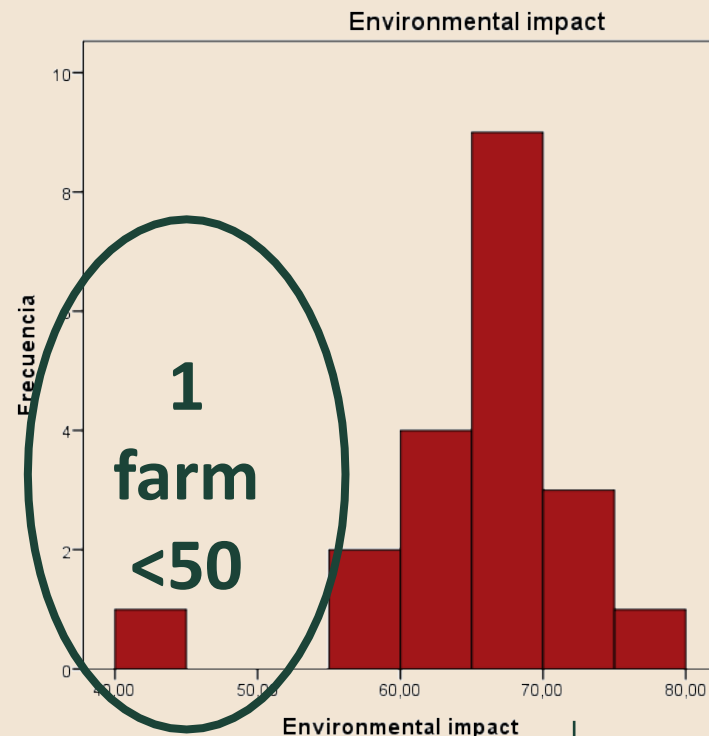
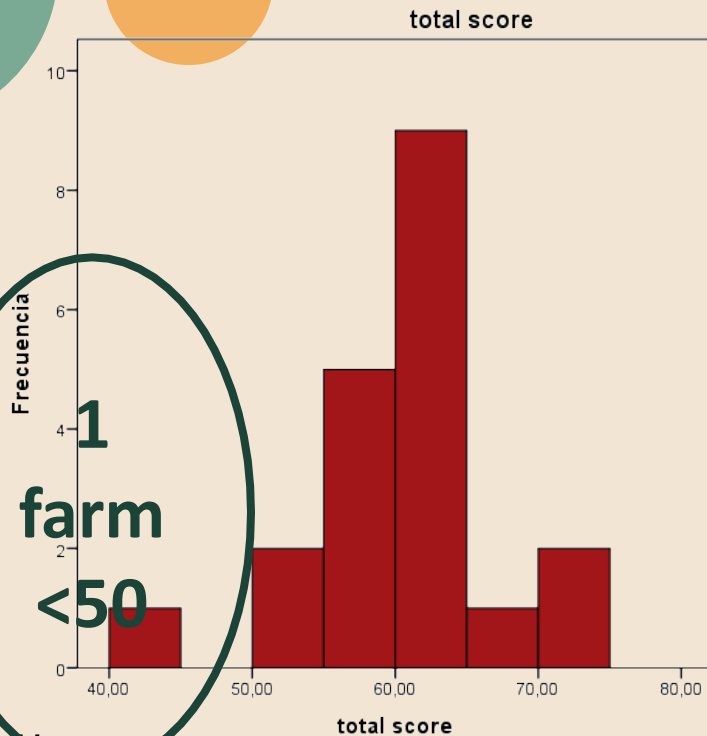
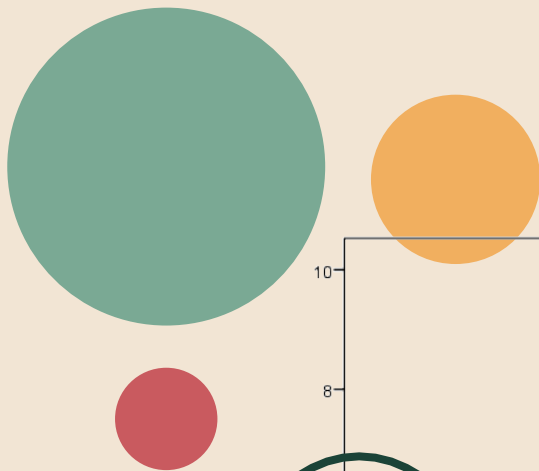
Ideal farm
Total score: 100
Environmental impact score: 100
Social impact score: 100
Economic impact score: 100

		Certifications	Management					Pasture management biodiversity	Waste and resource management	Total score	Environmental impact	Social impact	Economic impact					
Mean								5,70	5,26	7,15	5,19	61,14	65,89	55,92	60,28			
SD								1,64	2,08	1,51	1,98	2,57	6,68	7,87	9,51	5,89		
Min								0,00	5,00	1,00	2,38	1,00	0,00	42,50	42,92	45,00	47,76	
Max								9,60	7,00	9,00	7,00	8,10	10,00	74,48	78,51	82,96	72,95	
Percentils	25							7,80	5,00	6,00	1,00	4,76	6,00	4,06	57,14	61,72	49,68	57,66
	50							8,40	5,00	8,00	2,00	5,48	8,00	5,00	61,67	67,34	54,07	59,45
	75							8,60	7,00	9,00	3,00	5,71	8,00	6,25	64,27	69,68	60,83	64,26



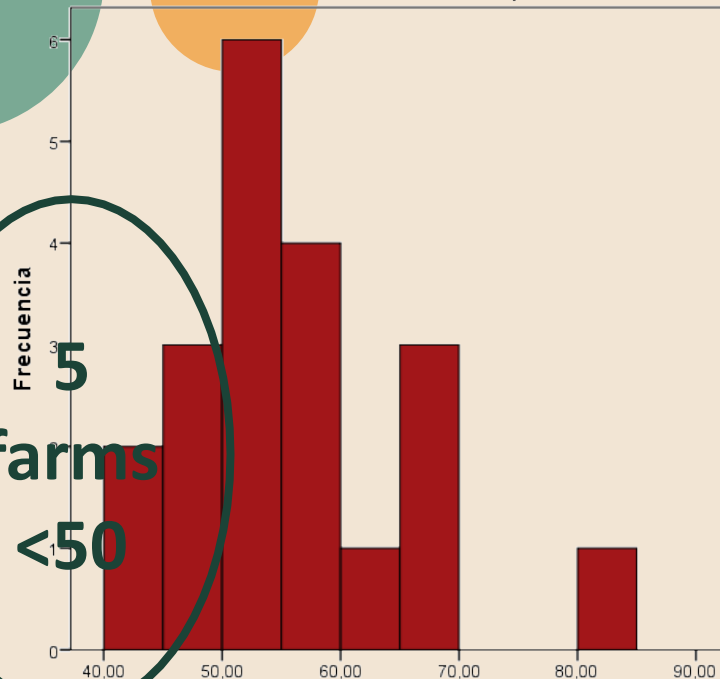
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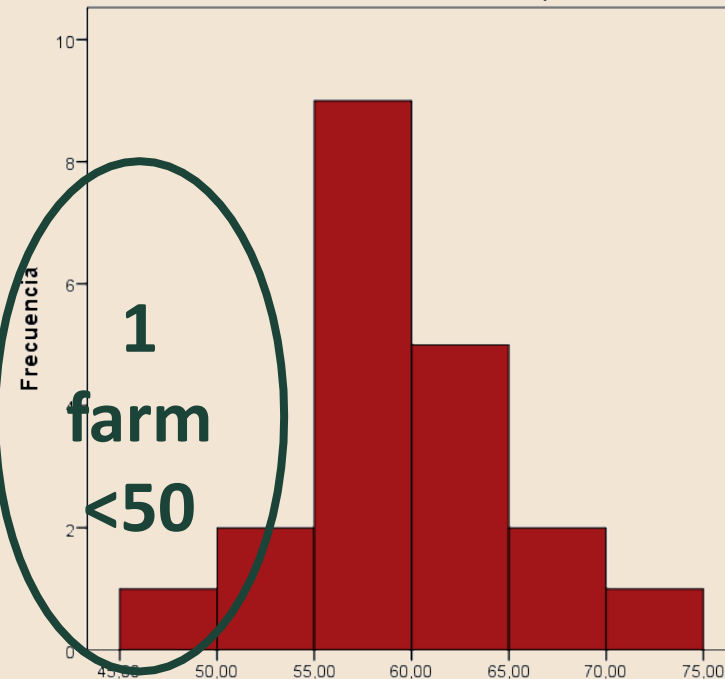


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Social impact



Economic impact



Social impact

Economic impact



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Conclusions

1. This calculator concept is useful for self-monitoring and quick evaluation in extensive and intensive pig farms.
2. Allows comparison (benchmarking) and identification of the weak points of pig farms
3. Facilitates the external evaluation and certification





Conclusions

- 
4. Great potential for differentiation of sustainable products
 5. Enables participatory certification and helps gain consumer confidence.
 6. It doesn't require complex data compilation to answer the questions.
 7. In next steps, we expect to correlate the scores obtained in the 'Quick Sustainability Scan Calculator' with information on productive data, economic aspects, and the meat quality.



Thank you for your attention

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