



# Farming factors affecting food safety and quality in NW Spain.



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Improvement of husbandry conditions is expected to improve animal welfare and food product quality [1]. However, the standards associated with organic farming do not per se ensure either high levels of animal health and welfare or safe food products [2]. It is necessary to examine the whole production chain from breeding to meat processing because farm processes and resultant food product quality are linked through the health of the animal and its disease status.

The OBJECTIVE of this study was to analyse how is beef-cattle farming in NW Spain on organic farms compares with intensive and conventional systems in terms of impacts on the safety and quality of cattle products.

## MATERIAL AND METHODS

244 organic  
2596 intensive  
3021 conventional

calves

GLOBAL ANNUAL WORK OF  
SAMPLED SLAUGHTERHOUSE

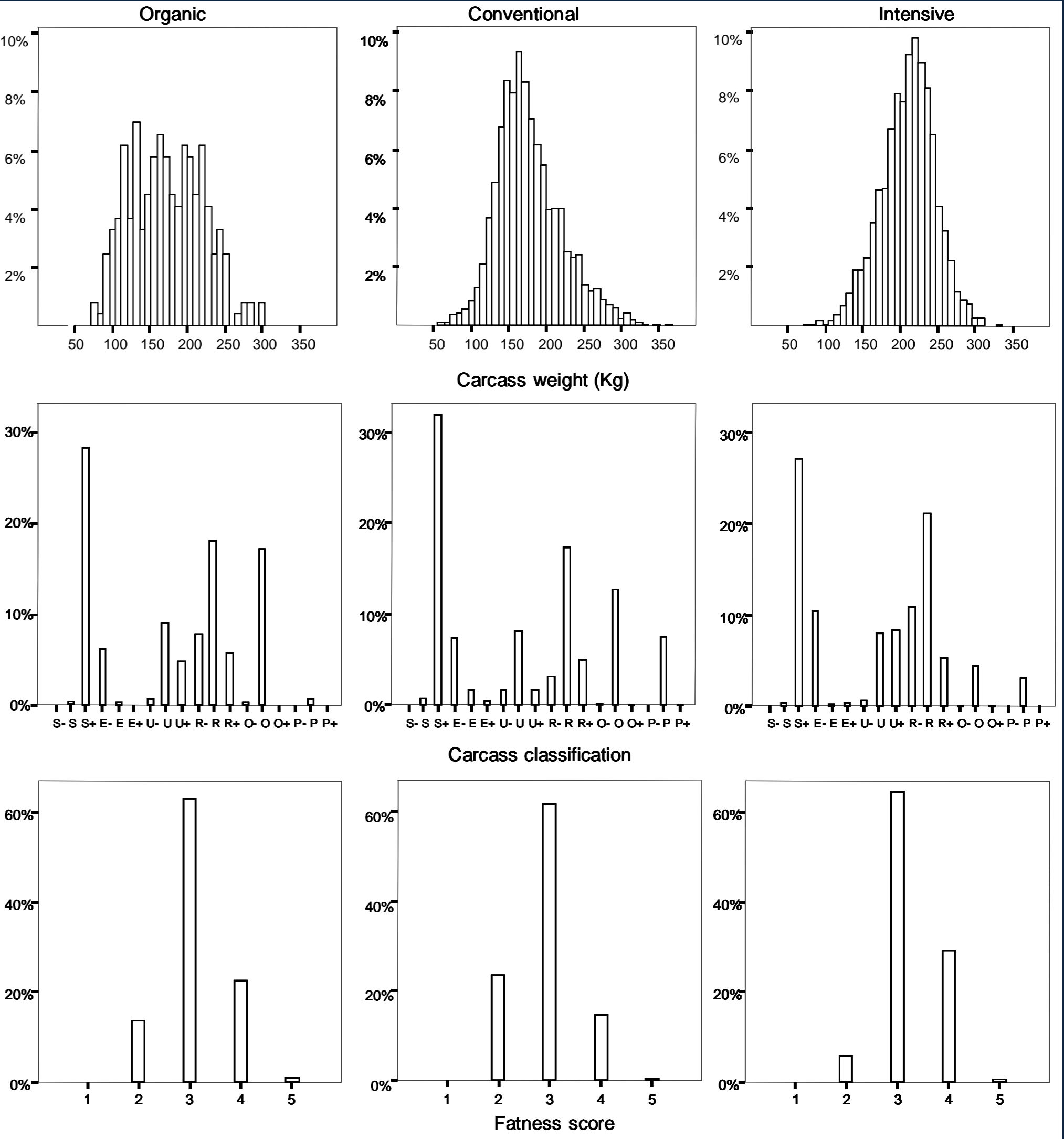
SPSS for Windows (v.15.0).  
Fisher test, ANOVA and  
Kruskal-Wallis test.

## RESULTS AND DISCUSSION

**PATHOLOGICAL FINDINGS and CONDEMNATIONS** at the post-mortem inspection (official veterinarians book)

	Organic (n=244)	Conventional (n=3021)	Intensive (n=2596)	Coefficient	p
Liver					
N	26 (10.7%)	374 (12.4%)	435 (16.8%)	H <sub>2</sub> =24.57	0.000
Abscesses	42.3%	66.1%	71.9%		
Parasites infection	23.1%	10.6%	3.94%		
Degenerative proc.*	11.5%	13.8%	12.8%		
Inflammatory proc.**	0%	0.54%	0.46%		
Other causes	23.1%	8.9%	10.9%		
Lung					
N	58 (35.2%)	535 (17.7%)	915 (35.2%)	H <sub>2</sub> =225.2	0.000
Pneumonia	94.9%	97.6%	99.2%		
Inflammatory proc.	0%	0%	0.32%		
Other causes	5.08%	2.23%	0.43%		
Kidney					
N	9 (3.7%)	362 (12.0%)	290 (11.2%)	H <sub>2</sub> =15.56	0.000
Kidney abscesses	0%	0.27%	0%		
Degenerative proc.	10%	0.27%	0.68%		
Inflammatory proc.	0%	0%	1.03%		
Other causes	90%	99.4%	97.9%		
Digestive tract					
N	78 (32.0%)	49 (1.60%)	211 (8.10%)	H <sub>2</sub> =430.5	0.000
Inflammatory proc.	94.8%	97.9%	98.6%		
Other causes	5.19%	2%	1.42%		
Heart					
N	1 (0.40%)	17 (0.60%)	12 (0.50%)	H <sub>2</sub> =0.328	0.849
Pneumonia	0%	7.1%	8.3%		
Degenerative proc.	0%	14.3%	8.3%		
Inflammatory proc.	100%	42.9%	8.3%		
Malformation	0%	14.3%	16.7%		
Other causes	0%	21.4%	58.3%		
Legs					
N	2 (0.80%)	5 (0.10%)	3 (0.20%)	H <sub>2</sub> =6.503	0.039
Inflammatory proc.	50%	20%	0%		
Traumatic injuries	50%	60%	33.3%		
Malformation	0%	0%	33.3%		
Other causes	0%	20%	33.3%		
Drug residues	0 (0%)	0 (0%)	1(0.03%)	H <sub>2</sub> =1.207	0.272

**CLASSIFICATION OF CARCASS:** carcass weight, carcass quality and fatness score by visual evaluation (graders book)



\* Degenerative proc. = Degenerative processes. \*\* Inflammatory proc= Inflammatory processes.

SEUROP system (grades from S: superior to P: poor) and a visual fatness score (5 grades from 1: lean to 5: fat) (103/2006/EEC)

**PATHOLOGICAL FINDINGS and CONDEMNATIONS:** The lower frequency of LIVER ABSCESSSES in organic calves may be related to low fraction of concentrate in the feed ration that can prevent rumen acidosis and liver disorders [3]. Grazing management on organic farms, in contrast to the permanent indoor conditions and standardized parasites-prophylaxis on intensive farms may explain respectively high and low percentage of PARASITIC INFECTIONS. Overcrowded and/or poorly ventilated conditions [4] may explain the high incidence of LUNG CONDEMNATIONS caused by pneumonia in intensive calves. DIGESTIVE TRACT INFECTIONS in organic calves may be associated with diarrhea or mucosa lesions (due to feeding behavior and supply in outdoor systems) [5].

**CLASSIFICATION OF CARCASS:** Feed ration of intensively reared animals leads to higher fat deposition. Homogenous carcass weights on intensive farms may be due to standardized husbandry and management indoor practices. In contrast, local food, seasonal influence, environmental conditions diversity of rustic breeds on organic farms lead to heterogeneity in slaughter weights.

Cattle from organic farms had BETTER HEALTH STATUS reflected by fewer condemnations at slaughterhouse. FATTENING FEED STRATEGIES for organic beef are needed to improve product quality.

References: [1]. Sundrum, A., 2001. Livest. Prod. Sci. 67, 207-215. [2]. Fall, N., Emanuelson, U., Martinsson, K., Jonsson, S., 2008. Prev. Vet. Med. 83: 186-195. [3]. Owens, F.N., Secrist, D.S., Hill, W.J., Gill, D.R., 1998. J. Anim. Sci. 76, 275-286. [4]. Grandin, T., 1997. Livest. Prod. Sci. 49, 103-109. [5]. Vaarst, M. and Hovi, M., 2004. Proceedings of the 2nd SAFO Workshop. pp. 7-15. Acknowledgements: This study was supported by the Xunta de Galicia (Spain) (PGIDT02RA6261001PR).