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Animal welfare index (AWI): an on-farm welfare evaluation of beef producing farms in Ireland and Belgium



Key external stakeholders:

Beef and Dairy farmers; Bord Bia; Department of Agriculture, Food and the Marine (DAFM).

Practical implications for stakeholders:

- The scientific consideration of farm animal welfare is important, due to the ethical obligation to maximise health and well-being and eliminate suffering in animals that are under human stewardship, the need to fulfill the requirements and demands of the general community and to improve the efficiency of animal agriculture by optimising animal health and productivity. There is a need to highlight the superior welfare status of Irish beef production systems when benchmarked with intensive beef production systems in Europe.

Main results:

- Beef production farms including suckler calf-to-beef (n=30), suckler calf (suckler calf/weaning/finishing) (n=63), dairy calf-to-beef (n=12), and Belgian farms (n=17) were assessed during the winter housing period using an animal welfare index. The range of farms evaluated in each country was representative of the beef production systems within the country.
- Seventy three percent (n = 96) of the farmers participating in the study were full-time (FT) while 27% (n = 26) were part-time (PT).
- The animal welfare index (AWI) that was used principally considered six aspects of the animal's environment as well as animal-based measurements. Fifty-one indicators were grouped into six categories: locomotion (six indicators), social interactions (eight indicators), flooring (four indicators), environment (nine indicators), stockpersonship (thirteen indicators) and husbandry management (eleven indicators). The higher the scores, the better were the conditions regarding animal welfare. The six category score was integrated and the AWI was calculated. The minimum attainable score on the AWI was -6; the maximum attainable score was 90.5 (range of 96.5 points).
- The mean AWI for the beef production systems were 70.3% (suckler calf-to-beef), 71.9% (suckler calf/weaning/finishing), 66.6 % (dairy calf-to-beef) and 56.7% (Belgian farms), respectively.
- There was no difference ($P > 0.05$) in AWI between full-time and part-time farmers.

Opportunity / Benefit:

- Demonstrated that the animal welfare index of Irish beef production systems are very high. The AWI of Irish farms were significantly higher than the Belgian farms.
- The welfare and management of farm animals are relevant concerns that need to be considered in order to increase consumer acceptance of our animal production systems in the future.

Collaborating Institution(s):

ILVO; Het Instituut voor Landbouw-en Visserijonderzoek, Belgium

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1. Project background:

Issues relating to the welfare of farm animals are becoming increasingly important within the European Union (EU). Increasing consumer concerns, reflected by the increasing amount of EU Legislation designed to improve the welfare of farm animals, show this clearly. The source of calves for Irish beef production come from the national herd of 2.18 million cows of which 49% and 51% are dairy and beef suckler cows, respectively. There are a wide range of beef production systems in use in Ireland with the two predominant systems today being the grass-based suckler calf-to-beef system and dairy calf-to-beef system. In suckler beef production systems, calves may be sold after weaning to a store/finisher producer or kept on the farm until slaughter. In dairy calf-to-beef production systems, calves may be kept on these dairy farms until slaughter or sold as calves under the age of 6-weeks for rearing and subsequently slaughtered. Cattle destined for beef production can be categorised into three production stages: 1) Pre-weaning period; 2) Post-weaning (store period) and 3) Finishing phase. There is currently no scientific data available on the status of animal welfare on the different beef production systems in Ireland or in more intensive beef production systems in Europe, eg. Belgium. An AWI developed by Mazurek *et al.* (2010) was used to assess animal welfare at farm level in Ireland and in Belgium.

2. Questions addressed by the project:

The study was designed to address the following questions:

- What is the welfare status of Irish beef production systems using an AWI from a previously validated index (Mazurek *et al.*, 2010)?
- What is the welfare status of beef producing systems in Belgium when benchmarked with the Irish AWI?
- How do the individual category scores influence the AWI for each of the beef production systems?
- Are there differences in the AWI between full-time and part-time farmers?

The beef production farms including suckler calf-to-beef (n=30), suckler calf/weaning/finishing (n=63), dairy calf-to-beef (n=12), and Belgian farms (n=17) were assessed during the winter housing period using the AWI (Mazurek *et al.*, 2010).

3. The experimental studies:

Farm selection

The number of farms visited, included suckler calf-to-beef (n=30), suckler calf weaning/store (n=63), dairy calf-to-beef (n=12) and Belgian farms (n=17) were assessed during the winter housing period using the AWI (Mazurek *et al.*, 2010). The beef Specialist Advisor of the national agriculture research and extension organisation (Teagasc) for each county, and BORD BIA, in Ireland were contacted to identify farms at random for the AWI assessment. The selected farmers were then contacted by the local Adviser to arrange access to the farm for assessment. In Belgium, 17 farms were identified and visited during the winter housing period. The range of farms evaluated in each country was representative of the beef production systems within the country.

During the winter housing period (2011 to 2013) 105 farms were visited in Ireland and data for each indicator of the AWI was collected for each farm.

Farm inspections

One hundred and twenty-two farms (105 in Ireland and 17 in Belgium) were visited to assess the AWI. Farms were visited once during the winter housing period (2011-2013). Two indicators of farm size were collected: i) number of hectares and ii) number of animals in the herd (including cows, calves, heifers, bulls, steers).

AWI score

For each of the 6 categories, (locomotion, social, environment, flooring, stockperson and husbandry management), the indicators were evaluated and a weighting was applied. The score for each indicator within a category was summated to give a category score. The 6 category scores were then integrated to give an overall AWI. The minimum score possible was -6 and the maximum score was 90.5 (range of 96.5 points).

AWI assessment method

Mazurek, M., Prendiville, D., Crowe, M.A., Veissier, I., Earley, B. 2010. An on-farm investigation of beef suckler herds using an animal welfare Index (AWI). *BMC Veterinary Research* 2010, 6:55doi:10.1186/1746-6148-6-55.

4. Main results:

Fifty-one indicators were grouped into six categories: locomotion (six indicators), social interactions (eight indicators), flooring (four indicators), environment (nine indicators), stockpersonship (thirteen indicators) and husbandry management (eleven indicators). Two indicators relating to the size of the farm and number of animals on the farm were also collected. The mean size of the farms and mean number of animals/farm were 99 ha and 191 animals for the suckler calf-to-beef farms, 74.8 ha and 148 animals for the suckler calf-to-store finishing, 105.8 ha and 272 animals for the dairy calf-to-beef and 76.2 ha and 236 animals for the Belgian farms. There was no difference ($P > 0.05$) in AWI between FT and PT farmers.

The mean AWI for the farms was 70.3% (suckler calf-to-beef), 71.9% (suckler calf/weaning/finishing), 66.6% (dairy calf-to-beef) and 56.7% (Belgian farms), respectively (Table 1).

The environment, stockperson, husbandry management and social categories were significantly correlated ($P < 0.001$) with the AWI for the suckler calf-to-beef systems. The social, environment, stockperson and husbandry management categories were significantly correlated ($P < 0.001$) with the AWI for suckler calf/weaning finishing systems. The stockperson and environment categories were significantly correlated ($P < 0.001$) with the AWI for dairy calf-to-beef systems. The environment, stockperson, social and locomotion categories were significantly correlated ($P < 0.001$) with the AWI for the Belgian beef production system.

Table 1. The mean category scores and integrated AWI scores for the Irish and Belgian beef production systems. The values are expressed as mean (\pm s.d.).

Beef system	Category scores						AWI Integrated scores
	Locomotion	Social	Flooring	Environment	Stockperson	Husbandry management	
Suckler calf-to-beef (n=30)	63.1 \pm 5.4	76.7 \pm 5.2	59.5 \pm 5.6	61.7 \pm 7.1	74.3 \pm 8.8	52.9 \pm 7.6	70.3 \pm 3.6
Suckler calf/weaning/finishing (n=63)	64.5 \pm 4.4	73.1 \pm 8.6	58.6 \pm 4.8	59.6 \pm 9.2	72.8 \pm 8.8	53.6 \pm 6.7	71.9 \pm 2.2
Dairy calf-to-beef (n=12)	64.6 \pm 3.9	69.9 \pm 4.9	57.1 \pm 4.0	56.0 \pm 9.0	78.3 \pm 4.4	39.3 \pm 17.0	66.6 \pm 3.9
Belgian system (n=17)	56.3 \pm 5.6	57.1 \pm 3.9	38.2 \pm 4.8	50.0 \pm 6.8	72.7 \pm 13.2	31.9 \pm 8.3	56.7 \pm 4.2

The presence of tethering systems, access to grazing, duration of winter housing, calving and the weaning methods were evaluated in the AWI. Irish beef producing systems scored better for those indicators compared with the Belgian system.

5. Opportunity/Benefit:

This study demonstrated the very high welfare standard of Irish beef production systems. There was no difference in AWI among the three Irish beef production systems, whereas the AWI of the Belgian system was lower ($P < 0.001$) compared with the Irish systems.

The welfare and management systems of farm animals are relevant concerns that need to be considered in order to increase consumer acceptance of our welfare-friendly beef production systems in the future.

6. Dissemination:

7. Compiled by: Dr Peter Lawrence and Dr Bernadette Earley