**Supplementary Material S2.**

New spline function for criterion 1: absence of hunger

Data as shown in table 1.2 in [Botreau *et al.* (2009](#_ENREF_1)) do not match with Figure 1.1. in [Botreau *et al.* (2009](#_ENREF_1)). The first four index scores in table 1.2 ([Botreau *et al.*, 2009](#_ENREF_1)) were placed incorrectly in figure 1.1 in [Botreau *et al.* (2009](#_ENREF_1)). Therefore, the data in [Botreau *et al.* (2009](#_ENREF_1)) were used to calculate a new and correct spline function as presented below.



**Figure 1** Spline function for criterion 1, absence of hunger, based on data in [Botreau *et al.* (2009](#_ENREF_1)).

***Table 1*** Coefficients and values of spline function for criterion 1 according to the expert consultation in [Botreau et al. (2009](#_ENREF_1)) and as shown in Figure 1 in this Supplementary Material S2.

|  |  |
| --- | --- |
| Coefficients  | Value |
| a1 | 0.0000000000 |
| b1 | 0.0000000000 |
| c1 | 0.0093729150 |
| d1  | -0.0000541267 |
| a2 | -3865.4448840019 |
| b2 | 144.9541766846 |
| c2 | -1.8025542202 |
| d2 | 0.0074955694 |

The index is transformed into a score with l-spline functions (Figure 1) as follows:

Index = I

When I≤80 then Score = 0.0093729 x I2 - 0.0000541267 x I3

When I≥80 then Score = -3865.445 + (144.95418 x I) – (1.8025542 x I2) + (0.0074955694 x I3)

The index as presented above replaces the index as presented in chapter 5.2.1.1. in Welfare Quality (2009).

**References**

Botreau R, Buist W, Butterworth A, Perny P and Veissier I 2009. Reports on the construction of welfare criteria for different livestock species. Part 3 – Subcriteria construction for Broilers on farm. Deliverable 2.8c, subtask 2.3.1.2, Welfare Quality® (EU Food-CT-2004-506508), Lelystad, The Netherlands.

Welfare Quality 2009. The Welfare Quality® assessment protocol for poultry (broilers, laying hens). The Welfare Quality® Consortium, Lelystad, The Netherlands.