|  |  |  |  |
| --- | --- | --- | --- |
| **Measure/criterion** | **missing information** | **data handling** | **based on consideration** |
| cleanliness of water points | in some cases, drinkers not visible (569 drinkers in 27°farms) | set to the score of the most prevalent state on farm | inspection/ cleaning of water points mostly done routinely |
| expression of other behaviours | partly unknown; access to pasture before fattening (e.g. < 200°kg)not included in protocol at time of assessment (all farms)  | all farms were treated as if they had no access to pasture  | most likely there was no pasturing before fattening period |
| mild integument alterations | hairless patches due to soiling of animals (55°farms) | soiled animals were assumed to have no hairless patches  | no correlation known for soiling and prevalence of hairless spots  |
| mutilations such as disbudding or tail docking | management routines on farms of origin unknown by the farmer (19°farms) | hornless animals with unknown history were treated as they were not disbudded/dehorned | any assumption would have been speculative (eg genetic hornless) |
| ease of movement | estimation of live weight in 100°kg intervalsnot included in protocol at time of assessment (all farms) | set to 275°kg or to 525°kg | midpoint of the two weight classes (200-350°kg and 350-700°kg) |

Supplementary Table S1: Approach used in case of missing data.

Supplementary Table S2: Results of the WQ assessment for the initial and final assessment (mean and range across all three assessments) regarding the criterion: ‘Absence of pain induced by management procedures’

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria |  |  | **mean** | ***min-max*** |
| absence of pain induced by management procedures | initial Ass. | interim Ass. | final Ass. | Ø all *ass.*  |
| practice of procedures of disbudding/dehorning animals | % of farms with less than 15% of hornless animals | 43 |  | 44 |  |
| % of farms dehorning/disbudding animals on-farm | 29 |  | 27 |  |
| average % of animals dehorned/disbudded on these farms | 87 |  | 95 | 40-100 |
| % farms where animals are disbudded | 100 |  | 100 |  |
| % farms using thermo-cautering for disbudding | 100 |  | 100 |  |
| % farms using no anaesthesia for disbudding | 44 |  | 41 |  |
| % farms using no analgesia for disbudding | 94 |  | 88 |  |
| practice of procedures of tail-docking animals | % of farms tail-docking animals | 6 |  | 5 |  |
| average % of animals tail-docked on these farms | 11 |  | 12 | 1-33 |
| % farms using no anaesthesia for tail-docking | 75 |  | 100 |  |
| % farms using no analgesia for tail-docking | 100 |  | 100 |  |
| practice of procedures of castrating animals | did not occur in this dataset | - | - | - | - |



*Supplementary Figure S1: Scheme of the stepwise selection of farms included in the*

*study and selection criteria for their allocation to the treatment groups: feedback and*

*advice (FA), feedback (F) and control (C)*