

The consequences of introducing animal based welfare assessment in legislation and official control – an interdisciplinary seminar at SCAW, SLU 4th October 2011

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Animal- vs. resource-based indicators: review of benefits and drawbacks in on-farm welfare assessment

Abstract/summary: On-farm animal welfare assessment may be predominantly based on resource-based indicators such as the type of housing, feeding, health plan (*eg* the animal Need Index) or animal-based measures (*ig* the Welfare Quality[®] protocols). The choice between these two types of measures seems dogmatic, some authors considering that resource-based indicators are risk factors for animal welfare whereas animal-based measures better reflect the true welfare state of animals. In order to review available resource- or animal-based measures, we first drew a list of properties for a measure to be considered valid for assessing animal welfare. These properties were derived from analytical methods: selectivity, trueness, reliability (repeatability, reproducibility), stability over time, fitness for the purpose (including sensitivity), and feasibility in different systems. The properties of the measures for the 12 welfare criteria defined in Welfare Quality[®] were analysed.

The results for each welfare criterion are as follows:

- Absence of prolonged hunger: body condition is more selective and reliable than access to feeders or type of food;
- Absence of prolonged thirst: tests on animals detect only strong dehydration thus number and quality of water points are more valid. Promising animal based measures are blood osmolality and hematocrite
- Comfort around resting: animal-based measures are selective but in some environments they seem not to be sensitive. An assessment of the environment refined by measures on animals increases the accuracy of detecting problems;
- Thermal comfort: resource-based measures (*eg* temperature) are reliable only if measured repeatedly over time and space (so feasibility is low); behavioural responses of animals (*eg* huddling *vs* panting in pigs) appear more reliable for short-term measurements
- Ease of movement: measures based on the animals, such as slipping and falling or animals moving are suitable, but, in some cases, they should be completed with resource measures or they are not feasible enough
- Absence of injuries and absence of diseases: direct assessment of animals is more valid than any other measure on the environment since they measure the exact problems;
- Absence of pain due to management procedures: the feasibility of measures taken on animals at the moment of procedures such as disbudding or castration is low and pain measures such as cortisol can hardly be applied on a large scale. Therefore, the assessment of the most common management practices on the farm seems more valid.
- Expression of social behaviour: there are many interactive factors influencing social behaviour so this behaviour cannot be predicted accurately from analysis of the environment.
- Expression of other behaviours: negative behaviours (*eg* stereotypies) are likely to be detected in farm conditions by direct observation of animals although infrequent occurrences can pose a problem. Positive behaviours (exploration, play) are more difficult to

- Good human-animal relationship: it is easier and more reliable to perform avoidance tests than to predict animal behaviour toward humans from questions to farmers on their behaviour and attitudes.
- Positive emotional state: there is not enough knowledge of the factors influencing emotional state for resource-based measures to have a good predictive value. Qualitative behaviour assessment appears to be more reliable.

In conclusion, there is no general rule whether animal-based measures are more or less valid than resource-based ones. This depends on the welfare criterion considered and to a lesser extent on the animal type. We recommend to use a mixture of animal- and resource-based measures (chosen according to their validity and feasibility) to assess the overall welfare of animals on farms.

This work was supported by the Swedish Centre for Animal Welfare