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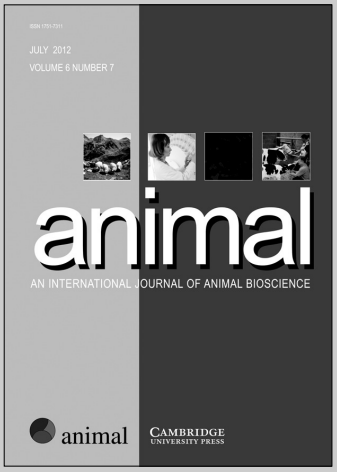

animal publishes original cutting-edge research, 'hot' topics and horizon-scanning reviews on animal-related aspects of the life sciences at the molecular, cellular, organ, whole animal and production system levels.

The main subject areas include: breeding and genetics; nutrition; physiology and functional biology of systems; behaviour, health and welfare; farming systems, environmental impact and climate change; product quality, human health and well-being.

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Animal pain: Identifying, understanding and minimising pain in farm animals

There is a growing awareness in modern society that farm animals may suffer pain. Pain in animals is perceived in many contexts ranging from animal experimentation, through mistreatment of pets and performing animals to inappropriate husbandry and treatment of farm animals. This perception inevitably makes dialogue difficult between animal rights activists who are against any use of animals, those who advocate improving animals' living conditions and economic stakeholders who emphasise the constraints that face them in their sector of activity. In 2008 the French Ministries of Agriculture and Research commissioned INRA to carry out a multidisciplinary scientific assessment (ESCo: expertise scientifique collective) of perception of pain by animals at all stages including the time of slaughter.

This assessment focused on farm animals but broadened it to humans when felt necessary. Researchers from many disciplinary fields were involved in the assessment. Life sciences, including pain in humans as well as in animals, animal behavior, stress physiology and husbandry systems were scrutinized. Human and social sciences were also used to broaden the concept. The study was based on a body of 1,400 scientific articles and international reports. The inquiry first defined pain in animals to distinguish it from related concepts such as suffering and discomfort, and the ways in which pain is expressed: Are all animals able to feel pain and, if so, how? Is it related to their phylogenetic position? Secondly, it addressed the measurement of pain: what tools have we to identify and quantify pain and are they readily available? The effects of pain on animals' behaviour and performance were also documented. Then, thirdly, the inquiry identified feasible alternatives and solutions to reduce pain.

The assessment provided a new perspective on the biotechnical and societal components of the issue of animal pain and practical information on how it can be reduced. It also identified gaps and scientific controversies and pinpointed areas requiring further research.

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