Introduction

The Canadian Council on Animal Care (CCAC) system of oversight is based on the Three Rs tenet of Russell and Burch (Replacement, Reduction, Refinement; Russell & Burch, 1959). The CCAC oversees the care and use of all species of animals involved in research, teaching and testing, and develops guidelines in order to assist both investigators and animal care committee members to meet appropriate standards for housing, husbandry and procedures at the local level. In order to fully address the ethical concerns in certain types of research, teaching and testing, more specific guidelines documents are developed; for example, CCAC guidelines on: the care and use of axillary (2003) and CCAC guidelines on: the care and use of fish in research, teaching and development (2005).

The current guidelines address the use of animals at the herd level and is non-invasive. Where the impact of the study is uncertain, or expected to have a negative effect on the animals lifespan is anticipated. In some instances, for example the use of animals to teach certain agricultural principles, or to knowledge that can be expected to assist in providing a good estimate of the number of animals required to test a given hypothesis at a specific level of significance and with a pre-determined level of statistical power (Dawkins & Russell, 1981).

Application of the Three Rs in Agricultural Research and Teaching

The CCAC is currently developing guidelines on: the care and use of farm animals in research, teaching and testing. As part of this exercise, the CCAC subcommittee on farm animals (CCAC, 1989) has spent some considerable time discussing the application of the Three Rs in the environment of agricultural research and teaching involving livestock species.

The CCAC and the Three Rs

Internationally, an assumption of the present day approach to the ethics of the use of animals by humans is that the use of animals in science forms a special class of animal use that deserves its own assessment criteria, which includes the Three Rs (Replacement, Reduction and Refinement; Colditz, 1989).

Reinforcement

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References


Dawkins M.S. & Sicinski V. (2005) The planning of procedures involving adult, laboratory and farm animals. In: The Principles of Humane Experimental Technique (Colditz, 1989). The CCAC is a peer based organization involving scientists, veterinarians, animal welfare experts and other stakeholders who participate in the CCAC Program and any other process likely to affect the guidelines.

Hoskin & Harcourt, Ottawa.

The use of animals in research, teaching, and testing is acceptable ONLY if it promises to contribute to understanding of fundamental biological principles, or to the development of knowledge that can reasonably benefit the life and welfare of animals.

The first outlined by Russell and Burch (Russell & Burch, 1959), is now enshrined in legislation regulating the use of animals for scientific purposes in several countries. In Canada, where there can be no federal legislation in this area because of the constitutional division of power (Wilson, 1998), the CCAC, as the national quasi-regulatory body has incorporated this tenet into its fundamental policy document, the CCAC policy statement on: the Ethics of Animal Investigation (CCAC, 1989).

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Replacement

Farmed animals can experience pain and distress. Investigators and those responsible for the care of animals have an obligation to mitigate or minimize potential pain and distress whenever possible and in a manner consistent with good scientific practice.

In addition to considerations of the benefit to be gained from a project, CCAC requires that protocols are refined so that the impact of the study on the animal is minimized through the use of best practices, and that the well-being of the animal is maximized through sound housing and husbandry practices. The CCAC guidelines on: the care and use of farm animals place considerable emphasis on the improvement of the quality of life for the animals used in research, teaching, and testing. However, this is balanced by the need for purpose-oriented assessment, focusing on the particular constraints for animals in the research, teaching and testing environment (Russell & De Passillé, 1995). Research and teaching institutions are expected to play a leadership role in the implementation of best practices and should be able to monitor key indicators of welfare as a demonstration of the effectiveness of approaches to refinement.

Summary

In developing the CCAC guidelines on: the care and use of farm animals in research, teaching and testing careful consideration has been given to the relevance of the Three Rs to an area of animal use by humans broader than the use of animals for biomedical science or fundamental biological research. The guidelines aim to provide information for investigators, animal care committees, facility managers and animal care staff that will assist in improving both the care given to farm animals and the manner in which experimental procedures are carried out (Reinforcement). Also in line with other CCAC guidelines documents (concerning wildlife and fish), the relevance of Replacement and Reduction strategies has been addressed. Careful consideration to model selection is important when animals are readily available on-site, and careful consideration of the appropriate number of animals for a study is also necessary, in particular where procedures may be more invasive than normally encountered during the life-cycle of the animal.

Application of the Three Rs in Agricultural Research and Teaching – CCAC guidelines on: the care and use of farm animals in research, teaching and testing

In the interests of sound science, investigators should explore alternative models to animal use in agricultural research, teaching and testing, which includes the Three Rs (Replacement, Reduction and Refinement; Colditz, 2006). For the CCAC this fundamental ethic of animal experimentation is expressed in the CCAC policy statement on: the Ethics of Animal Investigation (CCAC, 1989).

The use of animals, including farm animals, for research, teaching and testing is acceptable if it contributes to understanding of fundamental biological, behavioural or agricultural principles, or to knowledge that can be expected to benefit humans, animals or ecosystems. Evaluation of proposals must attest to the potential value of studies involving farm animals.

However, there are many types of research carried out in support of the agricultural industry - for example to improve livestock nutrition, to improve livestock husbandry systems, to improve attainment of specific agricultural productivity surrogate indicators, to understand epidemiological patterns, and to improve attainment of commercial goals (Colditz, 2004). All of these require the use of animals, and where the animals are the beneficiaries of the research, or where the research goal is to improve the productivity of the animal, replacement may not be an appropriate goal (Colditz, 2004).

Reduction

The numbers of animals maintained by an institution should not exceed the number that the facility can successfully house and care for.

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