



OVERVIEW OF REPORT

Genome editing and farmed animal breeding: social and ethical issues

Published December 2021

The Nuffield Council on Bioethics has published the findings of an in-depth inquiry into the social and ethical issues raised by the potential use of genome editing in farmed animal breeding.

This inquiry was carried out by a multi-disciplinary working group and was informed by contributions from a wide range of people, including an open call for evidence and a public dialogue held in summer 2021.

Genome editing is the precise, targeted alteration of a DNA sequence in a living cell. In farmed animal breeding, it could be used to produce animals with specific traits that might be difficult to achieve using conventional selective breeding approaches. For example, it could be used to make animals that are resistant to certain viruses, saving many animals from the effects of disease and bringing economic benefits to the agricultural sector.

However, a reduction in the risk from disease should not be used as a reason to pay less regard to the welfare of animals and their needs for appropriate conditions and care. Without appropriate checks and controls in place to guide the use of genome editing, its introduction into farmed animal breeding risks becoming a new route by which to accelerate some existing unethical breeding practices in the current system.

A key conclusion of the Nuffield Council on Bioethics is that the introduction of new technologies into food and farming must be aligned with public and animal interests. This should be as part of an overall vision for a food and farming system that supports, promotes, and rewards sustainable farming with high standards of animal welfare.

The UK Government has recently stated its intention to relax regulation for animals bred using genome editing techniques, noting that its use in animals raises ethical questions in relation to animal welfare which need addressing.

In our report, we a number of recommendations to the UK Government, animal breeders, major food retailers, and others involved in shaping the food and farming industries, both in the UK and internationally.

RECOMMENDATIONS

Regulatory policy review

Any revision of the current regulatory regime for genetically modified organisms should be preceded by a thoroughgoing policy review that addresses the effects of any proposed change on the wider food and farming system.

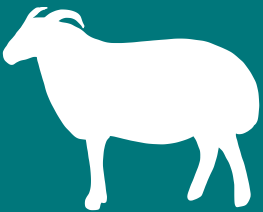
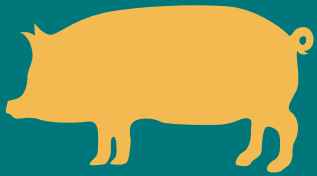
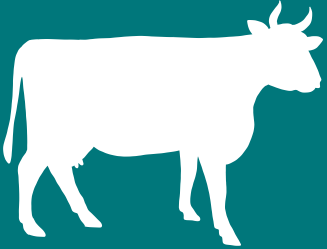
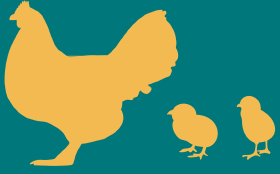
Public dialogue

The development of policy, law, and regulation in relation to farmed animal breeding and the introduction of new breeding technologies, should be informed by public views.

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Responsible breeding standards

All commercial breeders of farmed animals should adopt an explicit and recognised set of breeding standards, with independent oversight. We recommend the development of more detailed breeding standards (than those currently available) that may be enforced by a national competent authority. In particular, these should seek to ensure that animals are not bred to enhance traits merely so that they may better endure conditions of poor welfare, or in ways that reduce their capacity to live a good life.

Incentives for responsible breeding

Ways to encourage responsible breeding and the use of responsibly bred animals should be explored, for example through incentive payments to farmers associated with the use of animals with desirable characteristics.

Full value breeding indices

The use of breeding indices that reflect characteristics of animals that are of public or social, as well as economic, value should be explored as a possible regulatory measure. Commercial breed developers placing animals or animal reproductive materials on the market could be required to standardised information in this form.

Anticipatory governance of breeding

We propose a 'traffic light' system to assess the impact of breeding programmes on the lives of animals. Animals assessed to be in the 'red' category – where targeted breeding programmes have led to the production of animals with physiological traits that make it difficult for them to enjoy a good life – should not be used in commercial farming. This category might include, for example, fast-growing lines of broiler chicken. However, we envisage this approach working in an anticipatory way, to sound a warning when breeding is overreaching and to steer it towards more desirable outcomes. This system would apply to commercial breed developers and would need to be overseen by an independent regulatory authority.

We also recommend that an independent body should monitor the longitudinal development of breeding lines and report on these matters to the public authorities responsible for the oversight of farmed animal breeding.

Standard setting, monitoring, reporting and assessing

Public funding should be made available for independent research to develop, validate, and integrate new measures and standards for on-farm welfare.

Public funding should be provided to develop integrated systems to monitor, record, and report conformity with these standards, and to support their wide diffusion and adoption on farms.

Food labelling

Labelling of foods containing animal products should include scientific advice on food safety, nutrition, and health, and provide access to traceable attributes of interest to consumers, which may include factors such as breeding practices and technologies used; the animal's living conditions and diet; region of origin; and the ways in which products are processed.

Retail concordat

The UK Government should bring the major food retailers together to agree a pathway to ensuring that only products that come from animals that have been responsibly bred are offered for sale. The agreement should include a plan of how this will be achieved and overseen, including how it may be backed up by retailer (rather than product) accreditation.

Diet change

Public support, including funding, should be provided for initiatives to develop new food sources, make more just and effective use of existing ones, and to encourage and support voluntary changes in diet towards consuming animal products at sustainable levels and only when these are responsibly bred.

