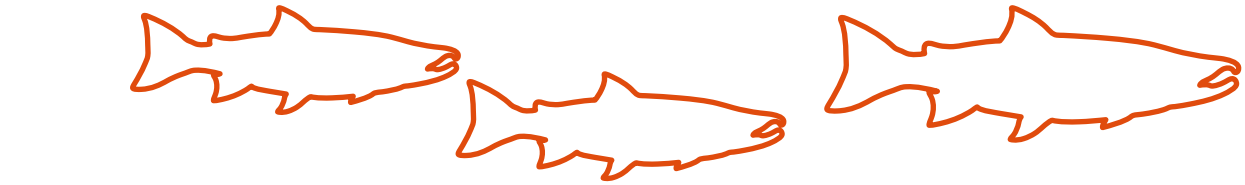
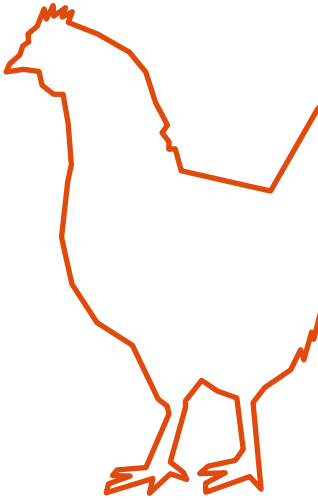


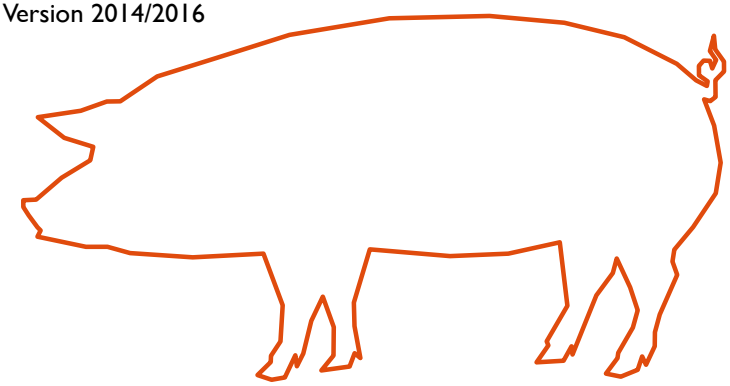
CODEEFABAR

the commitment to responsible breeding

Code of Good Practice for Farm Animal Breeding and Reproduction Organisations

Version 2014/2016





CONTENT

Code of Good Practice for Farm Animal Breeding and Reproduction Organisation

1. INTRODUCTION

This voluntary 'Code of Good Practice' is designed to provide users with a practical guide to help achieve sustainable and balanced farm animal breeding whilst delivering improved transparency for wider society. The use of Code-EFABAR® demonstrates that breeders carry out responsible breeding.

The Code can be applied to many farmed animal species, including cattle, pigs, poultry and fish; the principles may also be adapted to many other types of breeding animals. The Code is based on European principles and legislation but can also be used in a more international context – helping breeders to meet European standards in a global market.

Background

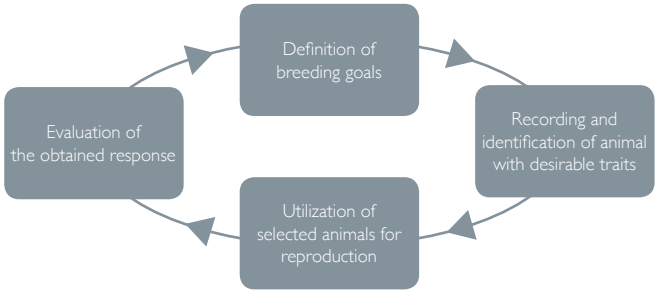
Code-EFABAR®, the commitment to responsible farm animal breeding, has developed over a number of years from a series of European Commission funded projects involving a wide range of stakeholders and scientists, including animal breeders, bioethicists, welfare experts, economists, lawyers and consumers. The projects helped to define sustainability and those areas where 'breeding can make a difference'.

Farm animal breeders are at the start of the food chain, and have a direct responsibility to provide genetically improved livestock for farmers. Breeders have to balance the needs of a wide range of stakeholders, including customers, policy-makers, politicians, consumers and wider society in the development of their breeding animals. This is a continuous process of consultation and adaptation and improvement with research, development, breeding programme, and multiplication towards the farmer.

How is this achieved?

1. Define the breeding goals/objectives.
2. Identify animals or groups of animals with the desired genetic merit.
3. Use the selected animals for reproduction and further breeding.
4. Evaluate results obtained and reassess the breeding goals.

The cycle of a breeding programme



Farm animal breeders operate on a global playing field with strong competition, therefore the provision of a 'sustainable' solution is necessary. They have to balance health and welfare issues with environmental load, whilst facing technical and economic realities in order to remain competitive and, importantly, to safeguard global food security for today and into the future.

Responsible breeding

Breeding improvements are cumulative (each cycle of breeding builds on the achievements of the last), with improved animals being supplied to a large number of livestock farms. Within the EU, livestock farming generates approximately 60% of total agricultural output. Animal breeding plays a crucial role in the global food supply chain balancing efficiency, availability and minimal environmental load. Farm animal breeding is now increasingly more balanced and sustainable – improved science, larger breeding populations and modern computing power are delivering better balanced breeding programmes which address the key issues of **food safety** and **public health**, product **quality, genetic diversity**, efficiency, environmental impact, animal **health**, and **animal welfare**.

2. THE CODE

- The main objectives of Code-EFABAR® are:
  - to be the standard instrument for defining and maintaining good practices for farm animal breeding.
  - to create transparency for society.
- Implementation is voluntary but all members of EFFAB are strongly encouraged to implement it.
- Code-EFABAR® may be implemented via existing management practices.
- The provisions of Code-EFABAR® are equal to or higher than current national or EU legislation. However, use of the Code does not replace these.
- Code- EFABAR® is designed to be complementary to other existing Good Practice initiatives.[5]
- Information about Code-EFABAR® is publically available at the Code-EFABAR website.
- Commitment to continuous improvement is an integral part of Code-EFABAR®:
  - Code-EFABAR® will be evaluated for updating by EFFAB every three years.
  - EFFAB encourages organisations to implement the Code by providing training and practical advice.

Breeding, sustainability and society

In a society increasingly interested in the ethics of management of sentient animals and in the use of natural resources, it is important that animal breeders take responsibility for their part of the animal production chain.

The main questions include ways in which breeders can account for ethical issues of the breeding practice and programmes of domesticated animals, influence future developments and ensure global food security while taking into account issues like environmental load, human and animal health and safety, and welfare of the animals, and enter into a dialogue with the other stakeholders.

Being transparent about the various aspects of food production is important. Since few people produce food – the many people consuming it are distant from the origins of food production. Yet, they deserve honest information about the way their food is produced and how their values and needs are being taken into consideration. Animal breeders and farmers must take care to develop and keep the domesticated animals in a professional responsible caring way. Ideally there is a 100% match between the perception of animal breeding and animal production in society, and farming and breeding reality. When food is produced in a responsible way, consumers deserve to feel good about it. Code-EFABAR® aims to contribute to building this understanding and the dialogue that is part of this process.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3. GUIDING PRINCIPLES

The Guiding Principles define the areas where responsible farm animal breeding can make a difference. They balance scientific knowledge and professional judgment with consideration of ethical and societal values.

Code-EFABAR® is divided into three parts: General statements; Sustainability; and Technologies.

3.1 General Statements

Breeding organisations implementing this Code must comply with the following five general statements:

- ✓ compliance with all relevant national and EU legislation e.g. zootechnical, animal welfare and animal health.
- ✓ consult and collaborate with international, national and regional authorities for the development and implementation of policies to support economic, environmental and social sustainability of the animal breeding sector.
- ✓ maintain high standards of biosecurity to minimize disease transmission.
- ✓ ensure the health and welfare of the animals under their care.
- ✓ ensure balanced selection for production, reproduction, health, welfare, robustness and environmental load.

3.2 Sustainable breeding

Sustainable breeding can be is defined by the breeding sector together with society stakeholders as

'the extent to which animal breeding and reproduction, as managed by professional organisations, contribute to maintenance and good care of animal genetic resources for future generations.'

This includes achieving the balance of six key subjects: food safety and public health, product quality, genetic diversity, efficiency, environment, animal health and welfare, described in more detail below:

Food Safety and Public Health

Breeding organisations are aware of the constant danger of transmitting diseases within animal populations and between animals and humans, as well as from one animal generation to another. These risks are taken into account in the development and implementation of breeding programmes. e.g., via specific pathogen free breeding programmes to deliver breeding stock to the production chain free of a number of important diseases. Breeders work to improve animals' natural genetic resistance to disease, thereby reducing the need for veterinary medication and decreasing the risk of developing antimicrobial resistance. Reducing the occurrence of zoonoses remains important to protect food safety and human health.

Product Quality

Product quality depends on the type of farming system the animal will be used in. For example, important quality traits in meat production include uniformity and quality of meat cuts, leanness, colour, firmness, structure and taste. For milk production low cell count and increased fat and protein content are important.
Breeders select for key traits to produce the most appropriate livestock for the various market segments.

Genetic Diversity

Breeding programmes are designed to make optimal use of existing genetic variation between and within populations.

Modern breeding organisations maintain genetic diversity in their breeding populations, and monitor and control the rate of inbreeding. In addition semen and/or embryos may be stored by (national) gene banks for relevant breeds and lines to ensure conservation of biodiversity. Diverse breeding populations may also be maintained in-house to protect genetic resources for future demand.

Efficiency

Efficiency criteria form an integral part of sustainability. Our increasingly globalized market requires breeders to supply more efficient animal breeding stock in order to meet the growing world population demand for all livestock products. Responsible breeders aim to meet to this demand in as balanced a way as possible.

Selecting animals that can produce in an economically viable way whilst making efficient use of feed and other resources that are required for their husbandry.

Environment

Responsible breeders select animals capable of reducing the environmental footprint and improving the ecological efficiency of farm animal production. Breeders work to avoid unintentional matings between domesticated and wild animals of the same species, and the cross-infection of disease between kept and wild animals.

Animal Health and Welfare

Safeguarding the health and welfare of the animals they keep and select, to ensure optimal health and welfare is a key consideration for all responsible breeders. This may include selection against aggressive behaviour between animals, however breeders must also maintain a balance with the intrinsic characteristics and behaviours of domesticated species.

Breeding organisations:

- ✓ Select to improve the animals' robustness and genetic resistance to disease, which improves animal health and welfare.
- ✓ Work to disseminate genetically improved livestock with minimum risk for the transmission of animal diseases.
- ✓ Work to reduce the genetic incidence of congenital defects in their population.

Welfare

Welfare encompasses the animal's general physical condition, its mental state, its biological fitness and its ability to cope with adverse effects of the environment in which it is kept.

Animals are often selected for the environments in which they will be kept. If the production environment changes, the breeding goal needs to be adapted so that the animals will perform and live well under the new conditions. Improvement of the robustness of animals will enable them to adapt to many different environmental and housing conditions. This does not imply that Code-EFABAR® supports unsuitable housing conditions.

Animals may be aggressive towards each other under certain conditions, causing pain and suffering to the "receivers" of aggression. Since the beginning of domestication, animal breeders have attempted to reduce animal aggression by selection of easy to handle animals, this started thousands of years ago and is still ongoing today.

Food Security

Food security, not directly included as a key subject, is achieved by taking into account the environmental load of animal breeding products, by ensuring genetic diversity and diversification of breeding units.

3.3 Breeding techniques

The Code specifically addresses the use of technology within both **breeding** and **reproduction**.

Breeding organisations having implemented the Code shall use related technologies only when these do neither harm nor compromise animal welfare in both the parents and the resulting progeny. They improve the applied technologies when this increases the sustainability of breeding in an economically viable way. Breeders working with the Code will be transparent about the use of all technologies used within their organisation.

The species specific guidelines of the Code further specify the relevant breeding and reproduction technologies in use.

Examples of breeding technologies

Animal Identification and Data Recording. Breeding Organisations work to identify animals without errors, to keep accurate records, and to improve data recording. Animal identification and trait recording are fundamental for all breeding programmes. The recording can be done within a breeding unit or organized as field recording. Recording of phenotypic data is the major driving force for genetic progress. This genetic progress is very much dependent on the accuracy of the data.

Conventional Breeding. In many species, the selection candidates' own performance and the performance of their relatives are measured for several traits. Statistical methods are used to estimate breeding values from these data. A combination of breeding values for several traits can be pooled into a selection index, and the animals with the best index are selected for breeding. In some species, where it is difficult or expensive to control matings and therefore to identify relatives, selection can be based on an individual's own performance only (mass selection).

Genomics is a new field of knowledge from which a new type of application has resulted: genome wide selection. Marker Assisted Selection (MAS) and genome wide selection make use of the molecular description information of the animal. When genes and markers are known, they can help to identify animals with the best breeding values. Genomics will not replace traditional breeding, but provides valuable additional information to enhance the accuracy of selection. Genome wide selection is used successfully to identify animals that carry genetic defects, and for timely detection of good breeding candidates on traits that can only be measured later in life or via relatives. E.g., milk yield potential of a bull measured on bull itself instead of on his daughters (x years later, and 50% genetically different).

Transgenesis is a new technology that is currently not being used by Breeding Organisations. This is partly for technological and economic reasons, and partly because there is no public approval of such developments at present.

Challenge Tests. In order to improve disease resistance or robustness of many animals, it may be necessary to apply challenge tests where a relatively small number of animals is put under stressful conditions to identify individuals with the desired features or, preferably, to develop MAS technology, so that genetically more robust or resistant animals can be selected for breeding.

Examples of reproduction technologies

Many reproduction technologies were initially developed to prevent disease transmission. People control the reproduction of the animals that they have under their care, both in pet animals and in farm animals.

Artificial Insemination (AI) is used by Breeding Organisations for most species. Use of IA is key in preventing venereal diseases. Progeny or sib testing based on AI is a prerequisite for an accurate estimation of breeding values in cattle and pigs, for production traits as well as for robustness (functional traits),especially for traits with low heritability.

Embryo Transfer (ET) in cattle and pigs reduces the risks of disease transmission, and is used to disseminate desirable genes from superior female animals. AI or ET can introduce a new breed into a country without the transport of live animals, thereby limiting the inherent risk of disease transmission and impaired animal welfare.

Freezing of semen and embryos allows Breeding Organisations to safeguard genetic diversity by generating a long lasting gene bank. It is also a useful tool for preserving endangered local populations and transporting responsible genetic improvements.

Sexing of embryos or semen allows for the production of the preferred sex (laying hens, multiplier sows, dairy cows), minimizing the production of animals of the other sex for which the market has no real assignment.

Cloning (somatic cells) is a reproductive technology for farm animals. Potentially it can be used to produce genetic copies of individuals and for dissemination of genetic progress but it may also be used to introduce a new or endangered breed into a country without risk of disease transmission by transport of animals. Today cloning in farm animal breeding is done mainly for research purposes and not for production of milk, meat or eggs.

Cloning (embryonic cells). Embryo splitting is being used in some species.

Footnotes

1. 'Breeding Organisations' includes all organisations responsible for breeding and reproduction of farm animals (e.g., primary breeding, herdbook, artificial insemination, embryo technology, hatchery, (grand) parent, data recording)
2. Code of Good Practice for European Farm Animal Breeding and Reproduction (EU funded project FOOD-CT-2003-506506). www.effab.info
3. Sustainable European Farm Animal Breeding and Reproduction (SEFABAR, EU funded project QLG7-CT-2000-01368) www.effab.info/sefabar and Farm Animal Breeding and Society (BIO4-1998-970055)
4. E.g. http://ec.europa.eu/food/animal/zootechnics/legislation_en.htm
5. E.g. Code of Good Veterinary Practice, Code of Conduct for European Aquaculture, Code of Practice for Good Animal Feeding, Code of Conduct for Responsible Fisheries, GLOBALG.A.P. Integrated Aquaculture Assurance Standard, GLOBALG.A.P. Integrated Farm Assurance.

Code-EFABAR is an initiative of the European Forum of Farm Animal Breeders (EFFAB).

EFFAB
effab@effab.info

Postal address
EFFAB
P.O. Box 76
6700 AB Wageningen
The Netherlands

Visiting address Belgium
Rue de Tréves, 61
1040 Brussels
Belgium
T: +32 2720 2722

Visiting address Netherlands
Dreijenlaan 2
6703 HA Wageningen
The Netherlands
T: +31 317 412 006