Code of Good Practice

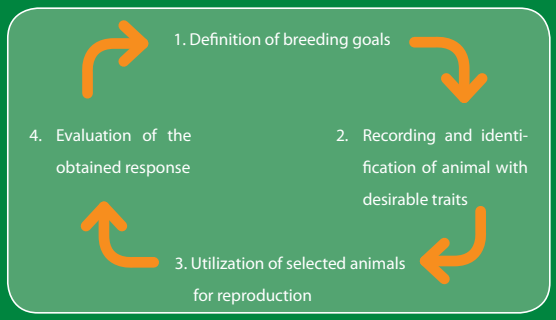
for Farm Animal Breeding and

Reproduction Organisations

1. Introduction

This "Code of Good Practice for Farm Animal Breeding and Reproduction Organisations[1]" addresses the issues of food safety and public health, product quality, genetic diversity, efficiency, environmental impact, animal health, animal welfare, and breeding and reproduction technologies. The Code gives a transparent presentation of the principles of conduct of farm animal breeders, and backs these principles by practical rules of conduct. The European Forum of Farm Animal Breeders (EFFAB) has taken the initiative for the Code, and it was developed in the EU-project Code-EFABAR[2]. We wish to be transparent about our practices and the technologies used. The Code is based on the priorities developed in 'Sustainable Farm Animal Breeding and Reproduction'[3]. The input of producers' and farmers' organisations, and the involvement of NGOs and policy makers have been indispensable in reaching this stage.

Working at the beginning of the food chain, farm animal breeders have a direct responsibility to provide quality genetically improved livestock (cattle, pigs, poultry, fish) to farmers. Different stakeholders may have different breeding goals/objectives, and emphasise different traits. But common tasks are to 1. define the breeding goals/objectives, 2. identify animals



The cycle of a breeding programme

1 'Breeding Organisations' includes all structures responsible for breeding and reproduction of farm animals (e.g. herdbook, artificial insemination, embryo-technology, data recording)

2 Code of Good Practice for European Farm Animal Breeding and Reproduction (EU funded project FOOD-CT-2003-506506). www.sefabar.org/code-efabar

3 SEFABAR (EU funded project QLG7-CT-2000-01368) www.sefabar.org

4 E.g. http://europa.eu.int/comm/food/animal/zoo-technics/index_en.htm

5 E.g. Code of Good Veterinary Practice, Code of Conduct for GlobalGAP Aquaculture, Code of Practice for Good Animal Feeding, Code of Conduct for Responsible Fisheries, GlobalGAP Integrated Aquaculture Assurance Standard, EurepGAP Integrated Farm Assurance.

6 E.g. Downloadable information from e.g. www.effab.info, www.code-efabar.org

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.

There is a moderate number of farm animal breeding organisations in the world, often jointly owned by farmers. The improvements of breeding are cumulative (each cycle of breeding builds on the achievements of the last), and advances are disseminated to a large number of livestock farms. For example, within the EU, livestock farming generates approximately 60% of total agricultural output. Animal breeding can play a crucial role in creating and maintaining this market share by enabling animal food producers to offer a wide range of competitively priced products.

Farm animal breeders indirectly influence food safety and public health, product quality, efficiency, environment, animal health and welfare, and genetic diversity. Because breeders operate on a global playing field with strong competition, a 'sustainable' solution that balances these issues with technical and economic realities is necessary to remain competitive.

The Code

- The main objectives of the Code are:
  - to become the standard instrument for defining and maintaining good practices for farm animal breeding
  - to create transparency for the public
- Implementation of the Code is voluntary
- The Code can be implemented through management standards already running
- The provisions of the Code are complementary to, and do not replace, national or legal obligations[4]
- The Code complements existing Good Practice initiatives[5]
- Information about the Code will be made available to the public and to stakeholders[6]
- Commitment to continuous improvement is an integral part of the Code:
  - Every two years the Code will be evaluated for updating. EFFAB will take the responsibility for updating the Code -consultations with stakeholders will be part of this process.
  - EFFAB will encourage organisations to implement the Code into their business by providing training and advice about practical consequences, costs, and advantages of the Code.

2. Guiding Principles

After extensive consultation and discussions with breeders and socio-economic specialists, SEFABAR described priorities for sustainable breeding and reproduction. These priorities are used as the basis for this Code.
This Code is divided into three parts: General statements (section 2.1), Sustainability (section 2.2) and Technologies (section 2.3). 'Sustainability' describes the choices with regard to the main concerns of the Breeding Organisations, and the way they achieve their goals. 'Technologies' describes the breeding and reproduction technologies that farm animal breeders do and do not use.

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 in actual breeding practice, influence future developments, and enter into a dialogue with the other stakeholders.
The concept of ethics has wide application. For its application in practice it must define which subjects are important and in which subjects breeding can make a difference, and these subjects must then be translated into breeding goals. This is where the notion of sustainability can be useful: it helps consumers and other stakeholders clearly to formulate their questions , and it helps breeders to present their achievements in a more understandable manner.
A great advantage of putting sustainability in the foreground is that it obliges decision makers, in the breeding sector and beyond, to combine subjects like profitability, health, welfare and the preservation of genetic resources in a unified perspective.
Stakeholders and other individuals can then decide whether they share the values expressed by a particular breeding goal. Similarly, breeders can adjust their priorities to public opinion where that is feasible and desirable.

2. Guiding Principles

2.1. General Statements

Breeding Organisations seeking to implement this Code of Good Practice must ensure that they comply with the following six general statements:

- Breeding Organisations must follow zootechnical, animal welfare and animal health legislations and relevant regulations and practices.
- Breeding Organisations must consult and collaborate with international, national and regional authorities for the development and implementation of policies, practices and regulations. These policies should assist the achievement of economic, environmental and social sustainability of the animal breeding sector.
- Breeding Organisations must use modern biosecurity methods to minimize disease transmission.
- Breeding Organisations must ensure the health and welfare of the animals under their care.
- Breeding Organisations must treat the animals under their care with respect.
- Breeding Organisations must ensure that selection for production traits is balanced by appropriate attention to reproduction traits and health- and welfare-related traits.

2. Guiding Principles

2.2. Sustainability

The Sustainability section of the Code specifies six key subjects: food safety and public health, product quality, genetic diversity, efficiency, environment, animal health and welfare, described in more detail in sections 2.2.1 to 2.2.6. "Sustainable breeding" is to balance all these aspects in an economically viable way.

2.2.1. Food Safety and Public Health

The direct possibilities for influencing food safety and public health by farm animal breeding and reproduction are limited. Breeding Organisations are aware of the constant danger of transmitting diseases from one animal generation to another, and attempt to minimise these risks. Breeding Organisations attempt to improve the animals' natural genetic resistance to disease, which reduces the need for medication and the occurrence of zoonoses and improves food safety and human health.

2.2.2. Product Quality

Breeding Organisations attempt to produce the most appropriate genetically improved livestock for the purpose in question.

2.2.3. Genetic Diversity

Breeding programmes are designed to make optimal use of existing genetic variation between and within populations. Therefore, Breeding Organisations attempt to maintain genetic diversity in their breeding populations, and to monitor and control the rate of inbreeding. Moreover, Breeding Organisations will contribute semen and/or embryos to (national) gene banks for relevant breeds/lines to ensure conservation of biodiversity.

Product quality depends on the main goal for which the animal is kept. For example, important quality traits in meat production can be uniformity and quality of meat cuts, leanness, colour, firmness, structure and taste. For milk production they can be a low cell count, and increased fat and protein content.

2. Guiding principles

2.2. Sustainability

2.2.4. Efficiency

Breeding Organisations attempt to select animals that can produce in an economically viable way, and that make efficient use of food and other resources.

Efficiency criteria form an integral part of sustainability, because there is strong global competition to supply breeding stock.

2.2.5. Environment

Breeding Organisations attempt to increase feed efficiency, which reduces the emission of minerals (N, P) into the environment. Breeding Organisations attempt to prevent unintentional matings between domesticated and wild animals of the same species.

2.2.6. Animal Health and Welfare

Breeding Organisations ensure the health and welfare of the animals they keep and select, so that pain and suffering are minimised; this may include selection against aggressive behaviour between animals. Breeding Organisations must keep a balance here with maintaining the intrinsic characteristics of domesticated species.

Breeding Organisations attempt to improve the animals' robustness and genetic resistance to disease, which improves animal health and welfare (see also 2.2.1).

Breeding Organisations attempt to disseminate genetically improved livestock with minimum risk for the transmission of animal diseases (see 2.3.2).

Breeding Organisations attempt to reduce the genetic incidence of congenital defects in their population.

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, e.g. from cage to aviary or floor, selection 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 this Code approves of unsuitable housing conditions.

Animals can be very aggressive towards each other, and in farming conditions this causes much pain and suffering for the "receivers" of aggression. Animal breeders have attempted to reduce animal aggression by selection since the beginning of domestication, thousands of years ago, and this is still ongoing.

Examples of Breeding Technologies

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).

Animal Identification and Data Recording Breeding Organisations attempt 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.

Marker Assisted Selection (MAS) is a new technology, which makes use of the DNA information of the animal. When genes and markers are known they can help to identify animals with the best breeding values. MAS will not replace traditional breeding, but provides additional information to enhance the accuracy of selection. MAS is used successfully to identify animals that carry genetic defects. Research on Quantitative Trait Loci (QTL) aims at the establishment of links between markers and traits under selection. QTLs are used for practical breeding; an. area where expectations are high is selection for robustness (functional traits).

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.

2. Guiding Principles

2.3. Technology

The Technology section of the Code specifies two key subjects: Breeding and Reproduction. Breeding Organisations use technology only where this does not harm or compromise animal welfare in the resulting progeny and they improve technology where this increases the sustainability of breeding in an economically viable way (see 2.2). When doing so, Breeding Organisations are transparent about the ethical, technical and socio-economical aspects.

Examples of Reproduction Technologies

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

Artificial Insemination (AI) is used by Breeding Organisations for most species. 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).

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/or 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. 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 sector has no real purpose.

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

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