

Animal agriculture: symbiosis, culture or ethical conflict?

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ABSTRACT. Several writers on animal ethics defend the abolition of most or all animal agriculture, which they consider an unethical exploitation of sentient non-human animals. However, animal agriculture can also be seen as a co-evolution over thousands of years, that has affected biology and behaviour on the one hand, and quality of life of humans and domestic animals on the other. Furthermore, animals are important in sustainable agriculture. They can increase efficiency by their ability to transform materials unsuitable for human consumption and by grazing areas that would be difficult to harvest otherwise. Grazing of natural pastures is essential for the pastoral landscape, an important habitat for wild flora and fauna and much valued by humans for its aesthetic value. Thus it seems that the environment gains substantially when animals are included in sustainable agriculture systems. But what about the animals themselves? Objections against animal agriculture often refer to the disrespect for animals' lives, integrity and welfare in present intensive animal production systems. Of the three issues at stake, neither integrity nor animal welfare need in principle be violated in carefully designed animal husbandry systems. The main ethical conflict seems to lie in the killing of animals, which is inevitable if the system is to deliver animal products. In this paper, we present the benefits and costs to humans and animals of including animals in sustainable agriculture, and discuss how to address some of the ethical issues involved.

KEY WORDS: Ethics, Sustainability, Animal welfare, Vegetarianism, Killing

INTRODUCTION

Animal agriculture has been heavily criticized by animal rights activists and others. Some of the critics have questioned the ethics of keeping animals for food production. Several of the most influential writers on animal ethics defend the abolition of most (Singer, [e.g.](#) 1975) or all (Regan, [e.g.](#) 1983) animal agriculture, which they consider an unethical exploitation of sentient non-human animals. Other critics have argued that animal agriculture has a devastating environmental impact world-wide, competes with humans for resources (including land and water) and contributes to an inappropriate human diet (Matheny, 2003; Gold, 2004). The conclusion again is that animal agriculture should be abolished, or at least cut down drastically.

We recognize that both animal welfare problems and environmental damage are common in many current systems, where large numbers of animals are confined under congested conditions in small areas. The explosion of livestock numbers means that in many areas of the world, animal production has become a major source of land, water and air pollution, acid rain, and global warming. Overgrazing has become a threat to biodiversity and the soil (Gold, 2004). But the fact that animal production is often badly managed is not a reason to demand its abolition, but rather to adapt more sustainable and hence more ethically acceptable systems. In this paper, we will argue that this can be done, and discuss how. We will present the advantages and the remaining unsolved ethical conflicts within sustainable animal production systems.

CO-EVOLUTION

In a less critical perspective, animal agriculture can be seen as the result of a co-evolution over thousands of years that has affected biology and behaviour on the one hand, and the quality of life of both humans and (those that were to become) domestic animals on the other. It has been suggested that domestication of our traditional farm animal species was a two-way process: some species entered domestication because of the advantages it provided to them, such as food, shelter and protection from predators (Budiansky, 1992; Stricklin, 2001). It has even been suggested that the relationship is a form of symbiosis (Rollin, 1995) or that it at least incorporates strong symbiotic¹ elements (Jarman *et al.*, 1982:59). From the ethical point of view, it is of course important to recognize that although the relationship may have been more or less reciprocal at first, humans have used their intellectual advantage over animals to exploit the weaker partner and make it a relationship of constraint. However, a relationship that has elements of a symbiosis can be seen in some parts of the world where animal husbandry has retained ancient forms. In Norway, for example, sheep, cattle and sometimes horses are released in early summer to graze vast mountain and forest areas. These animals are not fenced in or herded, but roam freely in nature all summer. Still, they voluntarily return to human company and care in the fall when grazing and weather get bad.

PASTORAL LANDSCAPE – CONSERVATION AND CULTURE

The pastoral landscape is an important part of the European cultural heritage and highly valued by humans. Grazing by large herbivores is necessary to maintain this landscape. Grazing is important for recycling of plant material, increasing plant biomass and diversifying plant communities, and it maintains large-scale open habitats for the fauna and flora (Pienkowski and Bignal, 1999). Livestock also provides manure that is colonized by huge numbers of invertebrates, in turn important feed for birds and mammals, as well as it improves soil fertility. For thousands of years, farming systems and livestock breeds developed within local environmental conditions, supporting rich wildlife populations as well as human and livestock populations. The interaction between grazing cattle and the environment has given rise to much of what we consider as characteristic of local ecosystems as well as regional cultures in Europe, including landscapes, wild life flora and fauna, villages and farms, quality foods and drinks. The conservation of biodiversity in the traditional agrarian landscape is considered an important goal in the European Union, and Agenda 2000 includes support schemes to preserve the pastoral landscape. In Sweden, for example, 28 of 37 species of extinct vascular plants in Sweden grew on agricultural land, as well as 57 of the 76 currently seriously threatened species of vascular plants (Nilsson, 1992). Most of these grow on grazed but unfertilized pastures. Government support schemes are now designed to encourage farmers to keep grazing cattle on such pastures.

Rich cultural traditions based on the human-animal relationship, involving all parts of life, have developed in all parts of the world where animal agriculture has been important. Although the human adaptation to the symbiotic relation with farm animals has mainly been cultural, the development of lactose tolerance among adults in dairy-based cultures indicates a relationship lasting long enough to also affect human biology. A strong geographic concordance among cattle milk gene diversity, human lactose tolerance and the distribution of the earliest European cattle pastoralists has been identified, suggesting that farming practices since the Neolithic era has left reciprocal genetic signatures in cattle and human populations

¹ Symbiosis can be defined as “the living together of two organisms in close association” (Boucher *et al.*, 1982).

from North Central Europe (Beja-Pereira et al., 2003). This reflects the extent to which domestication has shaped human societies and the genomes of both humans and cattle.

SUSTAINABILITY AND PRODUCTIVITY

Although animals might not be as crucial for human survival in Europe today as they once were, they still are important in sustainable agriculture. There is growing evidence that livestock used in balance with environmental resources enhance habitat for wildlife, and appropriate stocking rates have been shown to improve biodiversity in both the plant and animal communities involved (Blackburn and de Haan, 1999). Organic farming is among the best researched and documented examples of sustainable agricultural systems. In organic farming systems, ruminant animals are particularly important, if not indispensable, contributors to the sustainability of the system. Organic farmers rely on the nitrogen supplied by nitrogen-fixing bacteria living in symbiosis with leguminous plants. As a rule of thumb, one-third of the arable land of an organic farm should be grown with nitrogen-fixing plants to supply crop production with enough nitrogen. These plants may be utilized as green manure, but it usually is more efficient – both ecologically and economically – to process them through ruminants. It is shown that organic management (where farm animals are included) promotes soil fertility and biodiversity in farmland better than conventional management (Mäder et al, 2002; Ahnström, 2002), and is more efficient in resource utilization (Mäder et al., 2002).

Including animals in agricultural systems can increase efficiency because of their ability to transform materials unsuitable for human consumption and to graze areas difficult to harvest otherwise. Although this question has to our knowledge not been addressed experimentally, a theoretical argumentation can be made that traditional mixed farming systems can produce greater quantities of food than stock-free farming. This is true not least in developing countries. Animals can recycle wastes from the food industry, and in small-scale farming, animals can recycle household wastes. In developing countries, livestock function as reserves for lean times and buffer occasional surpluses. In areas with long winters and few jobs other than farming, livestock level out the farmer's work load over the seasons. Also, livestock produce not only food but many other items, including leather, wool and raw materials for the pharmaceutical industry. Thus, farm animals may increase rather than decrease the system's stability; conflicts with sustainability appear when stocking rates are too high (Blackburn and de Haan, 1999), and when animal production relies on grain, in particular grain that could be consumed directly as human food.

HUMAN NUTRITION

Human beings by nature are omnivorous, and in most cultures people consume a diet containing food of animal origin. It may be argued that the ability to eat varied foods is one reason humans have been able to establish themselves on all continents, including the Arctic, where animal products make up a large part of the diet (Harris, 1992). It has been suggested that mutations for meat-adaptive genes in the early hominids not only enabled the shift from a herbivorous ape diet to an omnivorous diet of humans, but also brought about a major increase in life span since the new genes also conferred disease resistance (Finch and Stanford, 2004). This caused an expansion of the human developmental schedule, allowing acquisition of knowledge and uniquely human skills that require extensive training.

There are several studies showing that diets low in meat tend to give better health (e.g., Berkow and Barnard, 2005). However, because of the absence or extremely low content of vitamins B₁₂ and D, iron, selenium and zinc, a completely vegan diet presents nutritional problems, especially for individuals with high nutritional requirements, such as growing children. In addition to requiring meticulous planning, the vegan diet also depends on supplementation with synthetic vitamins. Although a lacto-vegetarian diet is much more balanced (and advantageous for its content of fibre, carbohydrates and certain vitamins), it still is low in iron, selenium and zinc, minerals that are plentiful in animal products, in particular beef, blood and liver. A plant-based diet but with a small complement of iron-rich animal products, may therefore be nutritionally preferable (Dahlin and Lindeskog, 1999).

THE HUMAN-ANIMAL RELATION – A VALUE *PER SE*

Among the important positive contributions of animal agriculture is the effect of the human-animal relationship itself. It adds to the quality of life of many farmers and their families as well as visitors, and it may even be used to heal and relieve humans with problems of different kinds, for example mental disturbances or drug abuse. For the animals, it is suggested that humans may take one or several of the following roles: dominant animal, mother substitute, leader, or friend (Seabrook, 1986). Provided that the term "dominant animal" implies firm but sensitive control of one's charges, all these terms imply mutual emotional attachment. For some species, humans can also have the role of a social object (i.e., "companion") whose presence itself is rewarding for both the human and the non-human member of the partnership (Price, 1984).

CAN ALL WIN?

It seems that both humans and the environment gain substantially when animals are included in sustainable agriculture systems. But what about the animals themselves? Objections against animal agriculture often make reference to the disrespect for animals' life, integrity and welfare in present intensive production systems. Of the three issues at stake, neither integrity nor animal welfare need in principle be violated in carefully designed systems, where the benefits for the animals will be similar to those that originally may have motivated them to become domesticated: protection from predators and access to food and care. There are examples of such systems today. For example, organic farming tries to pay attention to productivity, animal welfare and to the environment. The organic standards include regulations aiming to create sustainable farming systems *and* to improve animal welfare (Padel *et al.*, 2004). There also are programs that focus only on animal welfare, for example Freedom Foods. The program was introduced in 1994 by The Royal Society for the Prevention of Cruelty to Animals (RSPCA), based on "The Five Freedoms". Adherence to the standards is controlled on the farm, during transport and in the slaughter-house ([RSPCA, 2005](#)).

Some traditional systems combine animal welfare and sustainable farming. The *dehesas* in Spain and *montados* in Portugal are example of farming allowing animals to live a fairly natural life. They are multifunctional systems used for grazing, silviculture and rotation cereal cropping, and have remained largely unchanged since Roman times (Peco *et al.*, 2000). The Dehesa systems support a wide variety of plant and animal species. They are grazed by sheep, pig, cattle, and goats under an extensive regime. The Norwegian system with forest and mountain grazing mentioned previously has its roots in an ancient transhumance system.

It allows animals maximum freedom during the summer. Interestingly, the Norwegian parliament has asserted that farm animals have an intrinsic value and must be handled with care and respect for the distinctive characters of each species. Animals must be kept in an environment granting a good quality of life, and people working professionally with animals must have relevant education (Anonymous, 2003). Legislation gives detailed rules for each species. The farmers' organisations are following up on the intent of the law with animal welfare action plans. This does not mean that there are no animal welfare problems in Norwegian agriculture, but it is an explicit aim of politicians, farmers and the processing industry to prevent such problems and improve the current systems.

The main argument here is that there are alternatives to industrialized, polluting and exploitative animal production that still are economically profitable enough to survive in the market economy, although they may be under tough economic pressure. Some are even superior to non-animal systems from the environmental and sustainability viewpoints. It thus seems possible to create farming systems that do not create ethical conflicts concerning either animal welfare or environmental consequences. However, one potential ethical conflict remains, that of the killing of animals, which is inevitable if the system is to deliver most animal products.

THE PROBLEM OF SLAUGHTER

Both from an environmental point of view and in order to limit the number of animals that must be killed, it is desirable to limit the number of animals in agriculture. What is the appropriate amount of animal production in a sustainable system? This is a very complex question, and currently there is not sufficient information to give a definite answer. The answer will also depend on value judgements and priorities: abolition of animal agriculture will efficiently combat problems with nutrient leakage to water and atmosphere, whereas maintenance of pastoral landscapes calls for a considerable number of grazing animals (Dahlin and Lindeskog, 1999).

It can be argued of course that the environmental and sustainability benefits of animal agriculture can be obtained without killing the animals: grazing animals can be kept until they die of old age (or euthanasia is called for), maintaining grassland and providing manure for organic agriculture. However, it is difficult to see how such a practice would be economically sustainable. Considerable public support would then be necessary, and it can be questioned whether this is realistic to expect within the foreseeable future. To obtain the nutritional benefits of animal products, killing animals is unavoidable.

The ethical discussion over killing is too multifaceted to be appropriately addressed here. We will focus on just two of the most important ethical issues involved in killing animals. One argument that it is wrong to take the life of an individual is that this deprives this individual of the possibility to realize future desires. The more an individual possesses a sense of the future and thus awareness of its possibility to realize future desires, the more wrong it would consequently be to deprive it of this possibility. Another argument against killing is that the right to life is the basis of all other rights. As we will see in the following, these two arguments are important when we draw a conclusion about the ethical acceptability of killing sentient beings.

The problem of the inevitable slaughter in animal agriculture can be handled in several ways. One is the systemic ecocentric approach suggested by Lund *et al.* (2004). According to this view animals are part of the agro-ecosystem, and just as in natural ecosystems the surplus of the system should be harvested each year, if ecosystem sustainability is to be maintained. For the purpose of system balance, the human takes the role of the predator. An alternative approach is to use the utilitarian departure point and make an overall cost-benefit analysis. Provided that the animals are not aware of their own future, and that they are slaughtered painlessly and unknowingly, the harm done to them can be considered less than all the other benefits gained by animal agriculture. Indeed, Singer (1975) concludes that farming animals for meat is not an ethical problem if these animals lead a good life, are killed without suffering and are replaced by new individuals. However, if the right to life is considered as an essential basis of all other rights, animal agriculture remains an ethical problem. From this viewpoint, killing is unacceptable even though no suffering is involved.

CONCLUSIONS

It has been argued that animal agriculture is an inseparable part of human culture, based on a human-animal symbiosis. From another view point it is claimed that animal agriculture causes an ethical conflict that can only be solved through its abolition. We believe that extreme positions in this discussion, whether it is demanding the total abolition of animal production or defending a system where animals as well as the environment are exploited, are not fruitful in (and may even hamper) the necessary work to develop agricultural methods that are both sustainable and ethically acceptable. Even though many types of modern agriculture have negative consequences for animal welfare and for the environment, we have presented examples demonstrating that it is possible to keep animals in a way that respects both their welfare and the environment. It could even be argued that the most environmentally, economically and nutritionally sustainable food production systems, at least under European conditions, include animals. However, these systems would look quite different from the kind of agriculture that dominates Europe today. They would provide a sustainable and healthy diet that basically is vegetarian but supplemented with small amounts of meat from ruminant animals, raised on pasture, or animals substantially fed on agricultural products not suitable for direct human consumption. Getting there is likely to be a long and gradual process (unless environmental catastrophes force a rapid development towards more sustainable systems). However, the action plan for implementing organic farming launched by the European Union in 2004 can be seen as a step in that direction.

Given that environmentally sustainable farming systems that respect animal welfare and integrity are possible, the most difficult ethical issue in animal agriculture is that of killing. Under the assumption that animals have a very limited perception of their future and that they are killed painlessly and unknowingly, killing may be balanced by the positive consequences of animal keeping in consequentialist or ecocentric approaches. In a rights-based approach, in particular one where the right to life is seen as fundamental, killing and thus animal agriculture remains unacceptable. Those who argue for ethical veganism, however, face the challenge to show how sustainable global food production can be achieved without animals.

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