1 The future of animal farming

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Does animal welfare have a place in sustainable farming? Or does the threat of global warming now mean that the interests of nonhumans must be sacrificed to meet the demands of a rising human population? Can we improve the way we keep animals and still feed the world? Do we have to choose between ethics and economics? Between humans and animals?

The current debates about the future of the planet have thrown up answers to such questions that could be very bad news for farm animals. The Food and Agriculture Organization (2006), for example, has argued that since livestock contribute so much to global warming, the only solution is more and more intensive agriculture – animals packed closely together to make the maximum use of space and kept inside to limit the damage they can do to the environment. The Food and Agriculture Organization (FAO) foresees more selective breeding and more genetic manipulation to produce animals that survive under such conditions. So just at the point where more and more people are becoming concerned with the ethics of how their food is produced (Tudge, 2004; Singer & Mason, 2006), animal welfare is in danger of being pushed off the agenda.

The aim of this book is to challenge the "them and us" thinking that sets the interests of humans and farm animals against each other and to show that to be really "sustainable," farming needs to include, not ignore, the welfare of farmed animals. Animal welfare is so closely linked to human health and to the quality of human life that true sustainability cannot be a choice between economics and ethics or between human welfare and animal welfare. Sustainability must mean having it all – viable farms, healthy safe food, protection for the environment, as well as better lives for our farm animals.

But in today's global economy, with its increasing concern about climate change, is this possible? Isn't animal welfare a luxury for a rich minority and quite irrelevant to the majority of people in the world who cannot afford it? Surely there is not enough space, or enough money, or enough anything to achieve high standards of animal welfare when we are not even managing to ensure basic standards of human

welfare? Surely we are going to have to make some very difficult choices. Of course we are. The point we want to make in this book is that those choices should put animal welfare at the heart of farming, even for those who put human welfare first. You don't have to care much about animals at all to see that their health and welfare will affect the health and well-being of you and your family and the whole human species through the food you eat, the diseases that might affect you, and the impact that agriculture of all sorts has on the whole planet.

As Bernie Rollin explains more fully in the next chapter, this interdependence between humans and animals can be seen as a kind of contract – a "deal" that goes back over thousands of years of human history. Traditionally, the deal was that farm animals provided us with food, clothing and much else while we provided them with food, protection from the elements and from predators. Humans have most often cared for their animals not out of sentiment but because their animals were valuable to them. With the industrialization of agriculture, we have broken that contract. Many people are no longer in touch with how farm animals are raised and so the health and welfare of food animals no longer seems to affect their own survival so directly. But indirectly it still does. Disease in food animals has potentially catastrophic effects on human health and the ecological effects of poor farming practices threaten the very life of the planet. It is time to renew the ancient contract for the benefit of all of us, not because it would be a pleasant extra if we could afford it but because it is a necessity we cannot afford to be without.

The exact terms of the new contract have yet to be worked out in detail because there are no easy solutions to the problems that confront us. On our side, there will have to be many changes – in our mind sets, in our diets, in our business models, and in the ways we keep animals. Furthermore, the future itself is uncertain as far as the technology that might become available or the changes in climate that might occur are concerned. But the essential elements are already clear. As this book shows, there are successful ways of farming that give priority to animal welfare, deliver high quality food, protect the environment and, most importantly, make business sense. What people value in their food is changing and continues to change. As a result there are some surprising changes in the way that global businesses set their priorities. There are commercial as well as social and ethical benefits to animal welfare.

The scale of the challenge

Agriculture is the largest industry on the planet. It employs 1.3 billion people and provides a livelihood for about a billion more (Food and Agriculture Organization, 2006a). Livestock production, which uses land both for grazing and for growing animal feed, takes up 30% of the ice-free land on the planet and is responsible for 18% of all greenhouse gas emissions measured as CO_2 equivalent – higher even than transport. Of the gases emitted as a result of human activity, livestock are

responsible for 37% of the methane, 65% of the nitrous oxide, and 64% of the ammonia. Much of this pollution comes from manure but livestock have an even more insidious effect on the environment. Livestock now account for about 20% of the total animal biomass in the world and 30% of what they now occupy was once the habitat for wildlife. Through forest clearance, livestock farming could thus be said to be the biggest destroyer of biodiversity. In Latin America, for example, 70% of previously forested land is now occupied by pasture (Food and Agriculture Organization, 2006a).

And that is just the current situation. The human population of the world is currently 6.5 billion. It is growing by 76 million each year and 95% of this population increase is in developing countries. The UN's medium projection forecasts that world population will reach 9.1 billion by 2050. Not only is the populations growing , so are individual incomes and, as people become richer their demand for food and other agricultural products also increases. With higher disposable incomes, people move towards more varied diets that include more pre-processed food, more foods of animal origin and more added sugar and fat (Food and Agriculture Organization, 2006a). The statistics are staggering. Currently 276 million tonnes of meat is being produced globally each year, increasing by approximately 3% each year. The UN's Food and Agriculture Organization's prediction is that global production of meat is set to double from its value at the beginning of this century to over 465 million tonnes in 2050. That means that the environmental impact of the animals that are currently farmed must be halved just to keep environmental damage to its current level.

Increasing demand for animal food products exerts extra pressures on an economy in all sorts of ways. It encourages advanced breeding and feeding technology in livestock production and it leads to the development of irrigation systems and the use of fertilizers to increase production of plant crops on which to feed the animals. However, the largest pressure is for change in the very structure of livestock production itself. Much animal farming is rapidly shifting away from extensive systems towards more intensive, "landless" production, particularly of pigs and poultry. Comparisons between world livestock production systems by the FAO (averages for 1991–1993 and 2001–2003) show that globally, 14.6% of total meat is produced in grassland-based systems (ruminants), compared to 33.6% in landless systems. Total pig meat output rose by 30% at world level, an increase accounted for almost entirely by Asia. The total production of poultry meat grew by approximately 75%, again with the highest expansion in Asia. By contrast, cattle stocks are up 5% and small ruminants 10% (Steinfeld et al., 2006).

All of us, rich or poor, city dwellers or rural farmers, are affected by agriculture and by the rising global demand for animal products. Against this background of potential water shortages, pollution and environmental damage, rising fuel costs, and the need to feed the human population, it would be all too easy for animal welfare to get lost. Indeed, the FAO response to what it calls "Livestock's Long

Shadow" is to concentrate entirely on the human issues and to see the future of farming in terms of intensive, indoor units, which have the aim of maximizing productivity and limiting the environmental damage food animals can do. There is no mention of animal welfare anywhere in the report (2006). The aim of this book is to redress that balance and to explore a more optimistic future for animal farming.

The scope of the book

We will be questioning the pessimistic view that there are just two possible futures for animal farming: either more and more intensive farms or no meat eating at all. Many different people have will argue from many different points of view that these are not the only alternatives in front of us. But we want to argue that there is another future that involves farming in a sustainable way but also makes sure that food animals have reasonable lives. The basis for this optimism is the fact that there already are successful commercial farms that are putting into practice many ideas that could form the future for animal farming if enough people want them and are prepared to make them work. The contributors to the book come from a diversity of backgrounds – from big business, from animal welfare organizations, from academic institutions, and from practical farming. They certainly do not agree with each other on everything but two common threads unite them. They all agree that farm animals *matter* and they all agree that sustainable farming must have animal welfare at its core, along with healthy food, human welfare, and environmental protection.

The book falls loosely into two sections, the first making the case for why major changes in animal farming are necessary, the second describing what the changed farming will be like. However, the fact that there is no clear distinction between the case for change and change that is already happening is one of the most encouraging features of the book. It shows that the aspirations are not only realistic but practical.

The book is dedicated to two people who directly or indirectly inspired many of the contributors to this book. Ruth Harrison's book *Animal Machines* (1964) awoke the public to the dangers of intensive agriculture and "factory farming." Throughout her life Ruth continued to campaign on behalf of farm animals and was never afraid to make herself unpopular on their behalf. David Wood-Gush was Professor of Agriculture at Edinburgh University and brought veterinary science and ethology (the study of behavior) into the service of animal welfare. His "family pig" system has now, with modification, been adopted with great success into a commercial venture and, as we will see throughout the book, provides a case study for how it is possible to bring about sustainable change in animal farming. We remember them and thank them.

The welfare of farm animals is facing a challenging future. On the one hand, the need to feed a rising human population has led to calls for greater â€œefficiencyâ€ in animal production, potentially putting animal welfare at risk. On the other hand, new technology is providing opportunities for monitoring the health and well-being of farm animals that could improve their welfare in an unprecedented way. Original manuscripts that address either or both of these issues are invited for this special issue, particularly those that describe (1) new technologies for assessing and measuring animal welfar Ø§Ù„Ø±Ø¦ÙŠØ³ÙŠØ© Ùƒ Ø·Ø¨ Ø¨ÙŠØ·Ø±Ù‰ The Future of Animal Farming. Ø§Ù„Ùƒ Ø§Ø¨Ø¨: Multiple References. Does animal welfare have a place in sustainable farming, or do the demands of a rising human population and the threat of climate change mean that the interests of animals must be put aside? Can we improve the way we keep animals and still feed the world â€“ or is it a choice between ethics and economics? The aim of this book is to challenge the "them-and-us" thinking that sets the interests of humans and farm animals against each other and to show that to be really "sustainable," farming needs t A cow lazily swishes its tail at a persistent buzzing, but the drone maintains its station hovering above the herd. The images it collects are analyzed with data from the animals and an array of sensors around the farm. A few miles away, the farmer acts on the information and decides to move the herd. Virtual gates open in an invisible fence and the drone emits a signal that stirs the animals into movement. Such futuristic cattle farming is not so far away. Farming animals for food raises complex questions. Livestockâ€™s versatility makes them central to the survival of millions of people in mar