

Science-based animal welfare standards: the international role of the Office International des Épizooties

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Abstract

The Office International des Épizooties (OIE) is a Paris-based, inter-governmental organisation with 164 member countries. Since its establishment in 1924, the OIE has made a major indirect contribution to animal welfare, at a global level, via the organisation's role in epizootic disease control. The OIE animal health code includes a chapter on minimum animal welfare standards for trade and a standard-setting role has also been played in respect of animal transportation. In 1994, the publication *Animal Welfare and Veterinary Services* was included in the OIE Scientific and Technical Review Series, and provides a valuable State Veterinary Service perspective on animal welfare capability and specific animal welfare issues. In drawing up its strategic plan for the period 2001 to 2005, animal welfare and food safety were identified as two areas for future OIE involvement and these were formally accepted as strategic initiatives at the 2001 OIE General Assembly meeting. An international expert group was established to provide specific recommendations on the nature and scope of the OIE's animal welfare role. The expert group's recommendations were reviewed and adopted, as Resolution XIV, at the May 2002 OIE General Assembly meeting. A permanent international working group was established and met for the first time in October 2002. This paper provides a background to animal welfare as an international trade policy issue and provides an update on progress to date in developing an OIE animal welfare mission statement, supporting guiding principles and policies, and an agreed *modus operandi*. Priority areas for OIE involvement are identified, and emphasis is placed on the importance of making use of all available expertise and resources, including those from academia, the research community, industry, animal welfare organisations and other relevant stakeholders.

Keywords: animal health, animal welfare, Office International des Épizooties, public policy, standards, trade policy, World Trade Organisation

Introduction

Over the last 50 years there have been dramatic increases in agricultural productivity, attributable to general advances in agricultural and veterinary science, specific improvements in genetics, nutrition, disease control and prophylaxis, and the impact of agricultural support programmes. There has also been an inexorable and substantial move to more intensive systems of production, especially in the more densely populated nations of Europe, Asia and North America, and particularly with pigs, poultry and beef cattle. More extensive systems of production continue to be practised in New Zealand, Australia, South America and Africa, for grazing species, and there is a strong public perception that more extensive management systems are synonymous with better welfare.

Seminal texts by authors including Harrison, Singer, Regan, Rollin, Webster, and others, in addition to the UK Brambell report (Brambell 1965), the concept of the 'Five Freedoms' (FAWC 1993), and the influence of behavioural science, have all had a significant impact, particularly in Europe and North America, on the attitudes to animal welfare of scientists, of the public at large and, through them, of politicians. Welfare aspects of animal agriculture and associated consumer preference behaviour have also attracted

increasing attention from some agricultural economists (McInerney 1998; Harper & Henson 2001) and agricultural ethicists.

In their paper entitled *Animal Welfare and Product Quality*, Jago and colleagues (2000) emphasise the importance of science-based animal welfare standards and the value of the Five Freedoms by stating:

"Most concepts of animal welfare include avoidance of undue suffering, optimising animal health and vigour and are aimed at achieving practices and environmental conditions which are fair and reasonable for the animal. Although the concept of animal welfare is widely regarded as being important, currently there is no single definition of animal welfare that has met with universal approval. People's beliefs and understanding of what is meant by 'welfare' and what is optimal or sub optimal welfare will vary, depending on such factors as their cultural, scientific, religious and political backgrounds."

According to Kellert (1988):

"the attitudes people have towards animals can be classified into nine categories including naturalistic, ecologicistic, humanistic, moralistic, scientific, aesthetic, utilitarian, dominionistic and negative and that differences exist between countries in the predominant attitude. Despite these differing attitudes towards

animals, there is a biological basis for evaluating animal health and welfare, and widespread acceptance that decisions about animal welfare should be based on good scientific evidence.”

The Council of Europe has played a key role in developing standards for Europe and these are taken note of internationally. These standards are based on both scientific evidence and practical experience, and also emphasise the importance of the relationship between animal health and animal welfare.

Jago and colleagues (2000) emphasise that:

“It is helpful to have basic guidelines or rules to refer to when making decisions that may impact on an animal’s welfare. Probably the most widely utilised set of guidelines is the Five Freedoms (FAWC 1993). These state that for an animal’s welfare not to be compromised it must have: freedom from thirst, hunger and malnutrition; freedom from discomfort; freedom from pain, injury and disease; freedom to express normal behaviour; and, finally, freedom from fear and distress. Sometimes slight modifications are made to these basic freedoms (eg fear is sometimes omitted from the final freedom), however, they generally serve as a set of goals towards which animal and handlers should strive. The Five Freedoms have been used by many legislators and frequently appear as the basis upon which animal welfare codes and practices have been established.”

As guidelines, the Five Freedoms provide a most useful paradigm. They should, however, not be taken as absolute requirements and increasingly they are seen to have important limitations by forward-looking animal welfare scientists (DJ Mellor 2002, personal communication).

There is an unfortunate tendency to underestimate the importance of animal health in relation to animal welfare. The prevention and control of disease in all species makes a major contribution to animal welfare, and veterinarians in general and the OIE in particular play a vital role in this regard.

Adams (2001), in reviewing the publication *Livestock to 2020: the Next Food Revolution* (Delgado 1999), emphasises the opportunity for veterinarians “to act locally but think globally” about animal welfare. This joint publication of the International Food Policy Research Institute (IFPRI) in Washington, the Food and Agriculture Organisation of the United Nations (FAO) and the International Livestock Research Institute (ILRI) in Nairobi, provides detailed information on the dramatic increase in the world’s consumption of food derived from animals over the last 30 years.

Expanding human populations, urbanisation and income growth are expected to continue, and even to accelerate, and Adams (2001) asks, “is it time to rejuvenate the science of animal husbandry to ensure that animals are better protected?” The importance of knowledgeable and caring animal husbandry is recognised as an essential prerequisite to maximising animal welfare (Hemsworth *et al* 1993).

Fraser (1999, 2001a,b) has emphasised the importance of the link between animal ethics and animal welfare, and the

vital relationship, in terms of public and societal opinion, between historical cultural attitudes to animals and the use of animals in modern agricultural systems. He argues that there is an urgent need to create a new consensus regarding the use of animals in agriculture. The veterinary profession in general and the OIE in particular are well positioned to make an important contribution to this debate.

The appearance of bovine spongiform encephalopathy (BSE) and recent outbreaks of classical swine fever (CSF) and foot-and-mouth disease (FMD) in Europe have led to the slaughter of millions of animals and to intense political and professional debate on the ethics and scientific basis of certain production systems.

World Trade Organisation considerations

The conclusion of the General Agreement on Tariffs and Trade (GATT) Uruguay Round in 1994, and the establishment of the World Trade Organisation (WTO) with its associated Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) agreements, in addition to the Agreement on Agriculture, were seen to set the stage and create a framework for all member nations to reap the benefits of agricultural trade liberalisation. There has, however, been a growing concern, particularly amongst some non-governmental organisations (NGOs) (RSPCA 1998; RSPCA *et al* 1998; RSPCA & Eurogroup for Animal Welfare 1999; Bowles 2000; RSPCA 2000), that the WTO rules-based trading system does not adequately address consumer interests, and that the credibility of, and public support for, the WTO is therefore at risk. The NGOs involved believe that the outcome of the tuna/dolphin, shrimp/turtle and leg-hold trap issues support their views. These three specific cases essentially support the view that animal welfare considerations cannot be used as a trade impediment (RSPCA 1998).

The WTO legal framework refrains from passing judgement on animal welfare and other non-trade concerns, but growing concern for animal welfare among some members has highlighted animal welfare and international trade as an important trade policy issue (Charnovitz 1998; Blandford & Fulponi 1999; Winter 1999; Brooman & Legge 2000; Swinbank 2000; Webster 2001). This is part of a broader debate regarding links between morality and trade, and the flexibility of the multilateral trading system to accommodate non-trade issues. The key to the WTO debate is whether trade measures based on animal welfare objectives, but which are not animal health related, are consistent with WTO rules. The prevailing view is that non-health measures involving animal welfare are not permitted, although this has not yet been tested under WTO dispute settlement procedures. Article 1 (non-discrimination) and Article 3 (identical treatment for ‘like product’, irrespective of processing or production method) of the GATT agreement, and the TBT provisions regarding ‘like product’, are critical in this regard. Bayvel (1993, 1996, 2000) has reviewed the topic from both a New Zealand-based and an international perspective.

The significance of international trade considerations is also reflected by the inclusion of specific WTO-related provisions in European Union (EU) Directives 98/58/EC (Anon 1998) and 99/74/EC (Anon 1999). Article 8 of Council Directive 98/58/EC required that the European Commission (EC) prepare a report on the comparison between EC and third country animal welfare provisions, on the scope for widening international acceptance of the welfare principles outlined in the Directive and on the extent to which European Community animal welfare objectives might be undermined by competition from non-member countries. This report was eventually published in November 2002 (Anon 2002a). Article 10 of Council Directive 99/74/EC also required that, no later than 1 January 2005, the EC Scientific Veterinary Committee submit proposals in respect of management systems for layer hens, which take into account the outcome of WTO negotiations.

Although a number of European countries were unsuccessful in having animal welfare included in the SPS agreement in the Uruguay Round negotiations, in the lead-up to the September 1999 Seattle Third WTO ministerial meeting, the EU clearly indicated that it viewed animal welfare as a key issue and, in late 2000, submitted a formal paper to the WTO Committee on Agriculture. This EU paper (Anon 2000) argued that animal welfare should be addressed primarily within Article 20 of the Agreement on Agriculture but emphasised that this was not a basis for new types of non-tariff trade barriers or sovereignty infringements. Measures proposed included the development of multilateral animal welfare agreements and appropriate labelling and compensation payments, which it was argued would have minimal effects on trade and production.

The agricultural negotiations received further consideration at the November 2001 WTO ministerial meeting in Doha, where it was agreed that non-trade concerns would be taken into account in the negotiations. This includes those elements of the animal welfare debate relevant to the Agreement on Agriculture, such as payments to compensate for the higher costs resulting from animal welfare requirements.

NGOs have proposed a package of similar measures, including the introduction of non-trade distorting 'green box' payments, the phasing out of export subsidies (which encourage intensive production methods and live animal transport), and the differentiation of 'high welfare' products via appropriate labelling.

With regard to the EU and NGO proposals to have animal welfare included in the WTO agreement, there is an alternative view that the various suggestions being made to address animal welfare concerns are more likely to receive broad-based international support, and to achieve the same objectives, if they remain outside the WTO agreement. This view argues that animal welfare concerns, including those that might have implications for trade, would be best addressed in specific, well-targeted agreements, rather than by seeking to treat animal welfare concerns as generic. If specific concerns are pursued, it is believed that these are likely to

be more successful than a generalised animal welfare initiative in the WTO.

There is no single international organisation with a standard-setting role or a responsibility for the provision of expert advice on animal welfare, although a number of organisations and agencies have a significant interest in this area. The largest of these is the Council of Europe, which developed the convention on farm animals in 1976 (COE 1976) and has three other conventions on animal welfare relating to welfare during transport (COE 1968), welfare at slaughter (COE 1979), and the welfare of companion animals (COE 1987). The Council of Europe has over 40 member countries and the standards that it develops relate to European farm systems. By the late 1990s there was growing support for the proposal that the OIE could be an appropriate, established, inter-governmental organisation to address animal welfare issues and to seek agreement on international standards.

Another important international regulatory concept relevant to this issue is that of 'equivalence', where one country accepts the standards and regulations of another as equivalent to its own, provided that they adequately fulfil the objectives of its own regulations. This can give assurance that good animal welfare standards are being observed, while reducing regulatory barriers to trade.

'Market Place' trends

In parallel with the policy debate on animal welfare and international trade, important initiatives have been taken by some producers and retailers. On-farm quality assurance programmes have become well established over the last decade. Their impact in the UK is reviewed in detail in the Farm Animal Welfare Council's (FAWC) interim report entitled *Animal Welfare Implications of Farm Assurance Schemes* (FAWC 2001).

The FAWC interest in this area is directly linked to its 'food quality' approach to farm animal welfare, and the recognition that the standards of welfare under which animals are produced are effectively a quality characteristic of the products consumed. The FAWC argues that:

"The food industry plays an essential part in the implementation of welfare standards by virtue of the influence it exerts in the sourcing of livestock products. The application of welfare standards to the 'food we eat' rather than the 'food we produce' has great relevance in this context. A logical consequence is that the animal welfare standards relevant to society should relate equally to imported livestock products as well as those produced domestically. Increasing recognition of consumers' concern about the welfare provenance of the food they eat should ultimately result in the establishment and acceptance of baseline welfare standards. By adopting baseline standards for animal welfare for all livestock products consumed, the Council believes that individual countries can play a leading role in raising animal welfare awareness internationally."

A number of OIE member countries, including some European countries, Australia, New Zealand, the USA and Canada, have gained valuable experience in the role of

industry-led quality assurance programmes in promoting animal welfare standards. This approach, underpinned by science-based national standards, provides an opportunity to benchmark animal welfare outcomes. It is preferred to, and seen to be a much more cost-effective option than, a prescriptive regulatory approach. These schemes have undoubtedly had a positive impact on animal welfare and have helped to directly address consumer concerns.

Retailers have also moved positively to address consumer concerns; Spedding (2000) emphasises the importance of their role by stating:

“Retailers are becoming the most potent force in setting animal welfare standards and will be the major engine for influencing animal welfare change. They can move faster than Governments, can cut off a supplier’s livelihood by stopping contracts and can ignore international trade agreements. While Europe as a whole has to adhere to the World Trade Organisation and cannot bar imports on animal welfare grounds, retailers are free to do so.”

Such retailer influence, initially exerted in Europe, has now been followed in the USA by McDonald’s, Burger King, Wendy’s and Wal-Mart. Both of these market place trends can involve voluntary labelling.

Animal welfare standards

Defining and assessing animal welfare has become the subject of a significant body of literature over the past two decades. The most commonly accepted definition is that “the welfare of an individual animal is its state as regards its attempts to cope with its environment, with attempts to cope including the functioning of body repair systems, immunological defences, the physiological stress response and a variety of behavioural responses.” (Broom 1996).

The 1999 European Directive on layer hens 99/74/EC (Anon 1999) and the 2001 European Directive on pigs 2001/88/EC (Anon 2001) are both based on extensive scientific reviews conducted by the EC Scientific Committee on Animal Health and Welfare. These Directives support the view that public perception does not necessarily equate to optimum animal welfare standards and, therefore, the Directives continue to permit the use of (enriched and larger) cages for layer hens and the confinement of sows in farrowing crates from one week pre-partum to weaning, and in pens for four weeks post-mating.

It is envisaged that standards developed by the OIE will follow the same science-based approach and draw on contemporary scientific consensus. To address the public perception issue it is recommended, as advocated by Fraser (1999), that animal welfare policy and standards should also be complemented by robust ethical analysis. Blokhuis and colleagues (2000) and MAFF (2001) further emphasise the important interaction between science and society.

Fraser (1999) emphasises the importance of both scientific and ethical inputs by stating:

“as it has unfolded to date, the debate has been disappointing intellectually, ethically, and politically: intellectually, because the debate has not resulted in a

genuine understanding of how animal agriculture affects animals, the environment, and the good of the public; ethically, because the polemical nature of many of the accounts of animal agriculture has tended to polarise the debate and to prevent real ethical analysis of important issues; and politically, because this polarised debate has failed to create a climate of dialogue and consensus building. As a first step towards rectifying these problems, there is an urgent need for scientists and ethicists to avoid simply aligning themselves with advocacy positions and instead to provide knowledgeable research and analysis of the issues.”

It has been agreed that these sentiments and this strategic approach are highly relevant if the OIE is to be both politically and publicly credible in the area of animal welfare.

Office International des Épizooties

The Office International des Épizooties (OIE) is a Paris-based, inter-governmental organisation with 164 member countries. Since its establishment in 1924, the three principal aims of the OIE have been:

- The provision of information on infectious animal diseases worldwide;
- The international promotion and co-ordination of studies on the surveillance and control of infectious diseases of animals;
- The harmonisation of international agreements and regulations for disease control including the facilitation of trade in animals and animal products.

The work of the OIE assumed a new prominence in the 1990s through recognition of its role in providing standards, guidelines and recommendations for animal health and zoonoses through the SPS agreement of the WTO.

The OIE has historically made a major indirect contribution to animal welfare globally, via the organisation’s involvement in epizootic disease control, and has included a chapter in the animal health code (OIE 2002) on minimum animal welfare standards for trade. It has also played a standard-setting role in respect of animal transportation and, in 1994, published *Animal Welfare and Veterinary Services* in the OIE Scientific and Technical Review Series (Moss 1994). This publication provides a valuable overview of the animal welfare role played by government veterinary departments in OIE member countries and includes review articles on specific international animal welfare issues.

In recognition of the increasing scientific, political and public attention being given to animal welfare in general, and its role in international trade in particular, animal welfare was identified as an important emerging issue during the preparation of the 2001–2005 OIE third strategic plan. At the 69th session of the OIE International Committee, approval was given to the Director General’s work programme to implement the recommendations of the strategic plan. In this programme, it was agreed to establish a new department specifically responsible for international trade in animals and animal products, which would provide extra resources to address new topics including food safety,

zoonoses and animal welfare. It was agreed that initial background documents would be commissioned to assist in defining the degree and scope of OIE involvement within these new topics.

The 70th General Session of the OIE was held in Paris in May 2002. The Director General, Dr Bernard Vallat, presented specific recommendations concerning the scope, priorities and *modus operandi* for the OIE's involvement in animal welfare (Anon 2002b), and these were fully endorsed by all 164 member countries. These recommendations were based on the work of an *ad hoc* group of international experts and included the following:

- The OIE should develop a detailed vision and strategy to recognise the complex nature of animal welfare issues.
- The OIE should then develop policies and guiding principles to provide a sound foundation from which to elaborate specific recommendations and standards.
- The OIE should establish a working group on animal welfare to co-ordinate and manage animal welfare activities and the working group should advise on specific tasks to be carried out by *ad hoc* groups.
- In consultation with the OIE, the working group should develop a detailed operational plan for the initial 12 months, addressing the priority issues identified.
- The working group and its *ad hoc* groups should consult with NGOs having a broad international representation and make use of all available expertise and resources, including those from academia, the research community, industry and other relevant stakeholders.
- The scope of OIE involvement in animal welfare issues should be grouped into the following:

Animals used in agriculture and aquaculture for production, breeding and/or working purposes;

Companion animals including exotic (wild-caught and non-traditional) species;

Animals used for research, testing and/or teaching purposes;

Free-living wildlife, including the issues of their slaughter and trapping;

Animals used for sport, recreation and entertainment, including in circuses and zoos.

And for each group, in addition to essential animal health considerations, the topics of housing, management, transportation and killing (including humane slaughter, euthanasia and killing for disease control) should be addressed.

- The OIE should give priority to animal welfare issues regarding animals used in agriculture and aquaculture and, regarding the other groups identified, the OIE should establish relative priorities to be dealt with as resources permit.
- Within the agriculture and aquaculture group, the OIE should first address transportation, humane slaughter, and killing for disease control, and, later, housing and management. The OIE should also consider animal welfare aspects, as issues arise, in the areas of genetic modification and

cloning, genetic selection for production and fashion, and veterinary practices.

- When addressing zoonoses, the OIE should give priority to addressing the animal welfare aspects of animal population reduction and control policies (including stray dogs and cats).

- The OIE should incorporate within its communication strategy, key animal welfare stakeholders, including industry and NGOs.

- The OIE should incorporate animal welfare considerations within its major functions and assume the following specific roles and functions:

Development of standards and guidelines leading to good animal welfare practice;

Provision of expert advice on specific animal welfare issues to OIE stakeholder groups, including member countries, other international organisations and industry/consumers;

Maintenance of international databases on animal welfare information, including different national legislation and policies, internationally recognised animal welfare experts, and relevant examples of good animal welfare practice;

Identification of the essential elements of an effective national infrastructure for animal welfare, including legislation/legal tools and the development of a self-assessment checklist;

Preparation and circulation of educational material to enhance awareness among OIE stakeholders;

Promotion of the inclusion of animal welfare in undergraduate and post-graduate university curricula;

Identification of animal welfare research needs and encouragement of collaboration among centres of research.

A working group, established after the May 2002 General Assembly, met for the first time in Paris from 16–18 October 2002. Participants in the working group included the following:

Members:

Dr David Bayvel (Chair), Director of Animal Welfare, Ministry of Agriculture and Forestry, New Zealand

Dr David Fraser, Professor and Chair in Animal Welfare, Faculty of Agricultural Sciences and Centre for Applied Ethics, University of British Columbia, Canada

Dr Andrea Gavinelli, Administrator, European Commission Directorate General, Health and Consumer Protection Unit E2, Animal Health and Welfare Zootechnics, Belgium

Dr Sira Abdul Rahman (Retired), Dean, Bangalore Veterinary College, Jayanagar Bangalore, India

Professor Dr Ismail M Reda (Absent), Faculty of Veterinary Medicine, University of Cairo, Egypt

Dr Walter Masiga (Retired), Nairobi, Kenya

Other participants:

Dr Alex Thiermann, President of the OIE International Animal Health Code Commission

Professor Tore Hastein (Absent), President of the OIE Fish Diseases Commission

OIE Headquarters:

Dr Bernard Vallat, Director General

Dr David Wilson, Head of International Trade Department

Dr Hiro Kamakawa, Chargé de Mission, International Trade Department

The working group developed a work programme for 2003, which addressed the following issues:

- Development of statements of mission, guiding principles and policies for adoption by the International Committee in 2003;
- Development of expertise and stakeholder databases;
- Scheduling of an animal welfare conference for late February 2004;
- Development of terms of reference, scope and membership of *ad hoc* groups, with possible meetings of two *ad hoc* groups in the first half of 2003;
- Increasing awareness of animal welfare in undergraduate training;
- Increasing awareness of animal welfare research needs and funding requirements;
- Promoting collaboration among academic and research institutions;
- Development of a communications plan addressing both internal and external audiences;
- Identification of future activities and emerging issues (eg animal biotechnology and aquaculture).

The working group reviewed the scope, drafted terms of reference, and identified potential members for four separate groups covering land transport, sea transport, humane slaughter (including a subgroup for religious slaughter) and killing for disease control. The working group also recommended that the OIE continue to work with the International Air Transport Association (IATA) and the Animal Transport Association (AATA) on transport issues.

Conclusions

Animal welfare is a complex, multi-faceted public policy issue that includes important ethical, economic and political dimensions. There is a real concern in some quarters that its recognition as an international trade policy issue is sought for ‘trade protectionism’, rather than ‘animal protection’ reasons. However, a strategic approach underpinned by science-based policy and standards, and an incremental approach to animal welfare change management (Mellor & Stafford 2001), helps to directly address such concerns.

Implementation of the agreed OIE strategic initiative on animal welfare presents significant challenges to ensure the identification of priorities, an appropriate focus, and the effective use of resources. The approach adopted must recognise the intense interest of NGOs, the public and politicians, and the significant scientific contribution that can be made by non-veterinarians. In its third strategic plan, the OIE has given increased priority and allocated addi-

tional resources to increasing its public profile and communication effectiveness. This initiative is particularly relevant to any future enhanced animal welfare role, because all forms of media take an active, ongoing interest in animal welfare issues.

In addition to full acknowledgement of and support for the OIE’s animal welfare role by its 164 member countries, it is considered strategically and politically important that other stakeholder groups, including industry groups, NGOs and the WTO, are also fully supportive of this role. The major international conference planned for February 2004 will, therefore, include all stakeholder groups.

With its 75-year history of achievement as a science-based international animal health organisation, and with an established infrastructure and international recognition, the OIE is well placed to play a key international leadership role in animal welfare.

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References

Adams D 2001 Animal Welfare Column. *Australian Veterinary Journal* 79(7): 448

Anon 1998 Council Directive 98/58/EC Concerning the Protection of Animals Kept for Farming Purposes. *Official Journal of the European Communities* L221, p 23. Available at: <http://europa.eu.int/eur-lex/>

Anon 1999 Council Directive 99/74/EC Laying Down Minimum Standards for the Protection of Laying Hens. *Official Journal of the European Communities* L203, p 53. Available at: <http://europa.eu.int/eur-lex/>

Anon 2000 *European Communities Proposal: Animal Welfare and Trade in Agriculture (Doc G/AG/NG/W/119)*. Available through the WTO document search engine at: http://docsonline.wto.org/gen_home.asp?language=1&_=1

Anon 2001 Council Directive 2001/88/EC Laying Down Minimum Standards for the Protection of Pigs. *Official Journal of the European Communities* L316, p 1. Available at: <http://europa.eu.int/eur-lex/>

Anon 2002a *European Commission Communication on Animal Welfare Legislation on Farmed Animals in Third Countries and Implications for the EU (Com [2002] 626)*. Available through the EC document search engine at: <http://europa.eu.int/prelex/apcnet.cfm?CL=en>

Anon 2002b *The Office International des Épizooties General Assembly Meeting Resolution No. XIV*. The Office International des Épizooties: Paris, France

Bayvel A C D 1993 Animal welfare — a threat or an opportunity for research, farming and trade. *Proceedings of the New Zealand Society of Animal Production* 53: 223-225

Bayvel A C D 1996 Animal welfare and international trade. *Unpublished Proceedings of the Second Pan Pacific Veterinary Conference, June 1996, Christchurch, New Zealand*. New Zealand and Australian Veterinary Associations.

Bayvel A C D 2000 Animal welfare and the international trade environment. *Workshop on Safeguarding Animal Health in Global Trade, Hanover, Germany*. Available at: <http://www.agriculture.de/acms1/conf6/ws9curr.htm>

- Blandford D and Fulponi L** 1999 Emerging public concerns in agriculture: domestic policies and international trade commitments. *European Review of Agricultural Economics* 26(3): 409-424
- Blokhuis H, Ekkel E, Korte S, Hopster H and van Reenen C** 2000 Farm animal welfare research in interaction with society. *The Veterinary Quarterly* 22(4): 17-22
- Bowles D** 2000 Is the World Trade Organisation a friend or foe to high animal welfare standards? *Animal Welfare Science, Ethics and Law Veterinary Association (AWSELVA) Newsletter* 4(1): 4-5
- Brambell F W R** 1965 *Report of the Technical Committee to Enquire into the Welfare of Animals Kept Under Intensive Husbandry Systems* (Cmnd 2836). Her Majesty's Stationery Office: London, UK
- Broom D M** 1996 Animal welfare defined in terms of attempts to cope with the environment. *Acta Agricultura Scandinavica. Section A, Animal Science* 27: 22-28 (Suppl)
- Brooman S and Legge D** 2000 Animal welfare vs free trade — free trade wins: an examination of the animal welfare implications of R v Ministry of Agriculture, Fisheries and Food. *Animal Welfare* 9: 81-85
- Charnovitz S** 1998 The moral exception in trade policy. *Virginia Journal of International Law* 38(4): 689-746
- COE** 1968 *European Convention for the Protection of Animals during International Transport (065)*. Available at: <http://conventions.coe.int/Treaty/EN/CadreListeTraites.htm>
- COE** 1976 *European Convention for the Protection of Animals kept for Farming Purposes (087)*. Available at: <http://conventions.coe.int/Treaty/EN/CadreListeTraites.htm>
- COE** 1979 *European Convention for the Protection of Animals for Slaughter (102)*. Available at: <http://conventions.coe.int/Treaty/EN/CadreListeTraites.htm>
- COE** 1987 *European Convention for the Protection of Pet Animals (125)*. Available at: <http://conventions.coe.int/Treaty/EN/CadreListeTraites.htm>
- Delgado C** 1999 *Livestock to 2020: The Next Food Revolution*. The International Food Policy Research Institute: Washington DC, USA
- FAWC** 1993 *Second Report on Priorities for Research and Development in Farm Animal Welfare*. Farm Animal Welfare Council: London, UK
- FAWC** 2001 *Interim Report on the Animal Welfare Implications of Farm Assurance Schemes*. Farm Animal Welfare Council: London, UK
- Fraser D** 1999 Animal ethics and animal welfare science: bridging the two cultures. *Applied Animal Behaviour Science* 65: 171-189
- Fraser D** 2001a The culture and agriculture of animal production. *The Australian and New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART) News* 1: 1-2
- Fraser D** 2001b The "new perception" of animal agriculture and a need for genuine analysis. *Journal of Animal Science* 79: 634-641
- Harper G C and Henson S J** 2001 *Consumer Concerns about Animal Welfare and the Impact on Food Choice — The Final Report*. Centre for Food Economics Research, University of Reading: Reading, UK
- Hemsworth P H, Barnett J L and Coleman G J** 1993 The human-animal relationship in agriculture and its consequences for the animal. *Animal Welfare* 2: 33-51
- Jago J, Fisher A and Le Neindre P** 2000 Animal welfare and product quality. In: Balázs E, Galante E, Lynch J M, Schepers J S, Toutant J-P, Werner D and Werry P A T J (eds) *Biological Resource Management: Connecting Science and Policy* pp 163-171. Springer: New York, USA
- Kellert X** 1988 Human-animal interaction: a review of American attitudes to wild and domestic animals in the twentieth century. In: Rowan A M (ed) *Animals and People Sharing the World* pp 137-175. University Press of New England: New Hampshire, USA
- MAFF** 2001 *Conference on Ethics and Animal Welfare 2001 — Relationships Between Humans and Animals*. Ministry of Agriculture, Fisheries and Food: Sweden
- McInerney J P** 1998 The economics of welfare. In: Michell A R and Ewbank R (eds) *Ethics, Welfare, Law and Market Forces: The Veterinary Interface: Proceedings of a Symposium of the Royal College of Veterinary Surgeons and the Universities Federation for Animal Welfare* pp 115-134. Universities Federation for Animal Welfare: Wheathampstead, Herts, UK
- Mellor D J and Stafford K J** 2001 Integrating practical, regulatory and ethical strategies for enhancing farm animal welfare. *Australian Veterinary Journal* 79: 762-768
- Moss R** 1994 Animal welfare and veterinary services. *The Office International des Épidémiologies Scientifique and Technical Review* 13(1): 13-302
- OIE** 2002 *International Animal Health Code. Mammals, Birds and Bees, 11th Edition*. Office International des Épidémiologies: Paris, France
- RSPCA** 1998 *Agenda 2000: Future for EU Farm Animal Welfare*. Available to order at: <http://www.rspca.org.uk/servlet/ContentServer?pagename=RSPCA/Publications/CampaignReportsRSPCA&articleid=0>
- RSPCA** 2000 *Unpublished Proceedings of a Conference on the Impact of the World Trade Organisation on Farm Animal Welfare, October 24th 2000, London, UK*. Royal Society for the Prevention of Cruelty to Animals.
- RSPCA and Eurogroup for Animal Welfare** 1999 *Food for Thought: Farm Animal Welfare and the World Trade Organisation*. Available to order at: <http://www.rspca.org.uk/servlet/ContentServer?pagename=RSPCA/Publications/CampaignReportsRSPCA&articleid=0>
- RSPCA, Eurogroup for Animal Welfare and The Humane Society of the United States** 1998 *Conflict or Concord: Animal Welfare and the World Trade Organisation*. Available to order at: <http://www.rspca.org.uk/servlet/ContentServer?pagename=RSPCA/Publications/CampaignReportsRSPCA&articleid=0>
- Spedding C R W** 2000 *Animal Welfare*. Earthscan Publications: London, UK
- Swinbank A** 2000 Ethics, trade and the World Trade Organisation. *Unpublished Proceedings of the University of Reading Agricultural Economics Society Annual Conference, 14-17 April 2000, University of Manchester, UK*. Available at: <http://www.apd.rdg.ac.uk/AgEcon/staff/staffpapers/AESEthics00.pdf>
- Webster A J F** 2001 Farm animal welfare: the five freedoms and the free market. *The Veterinary Journal* 161: 229-237
- Winter M** 1999 European agricultural policy and farm animal welfare *Food Policy* 23(3-4): 305-323