

Symposium: International Animal Agriculture: Welfare in Animal Production, from Science to Practice

672 ASAS Centennial Presentation: The impact of current global challenges in the animal agricultural industry. A. Tewolde^{*1} and T. Diaz², ¹*Inter American Institute for Cooperation on Agriculture - IICA, San José, Costa Rica, ²Food and Agriculture Organization - FAO, Santiago de Chile.*

The important contribution of animal agriculture to today's main challenges that the world faces is recognized. Globally, animal agriculture employs 1.3 billion people, accounts for almost 40 percent of agricultural gross domestic product, provides one third of total protein intake, and most rural people depend on livestock to survive, and the general contribution of livestock to the gross national product (GNP) will increase with time. It is estimated that almost 42% of the agricultural GNP will be attributable to the livestock sector by 2030, of which 39 and 50% correspond to the developing and developed countries, respectively. It is also expected that global animal production will increase in response to higher income and consumption in developing countries. However, rural poverty, climate change and natural resources degradation may become the main threats to the global animal agricultural industry. For example, it is estimated that in 25 years time meat and cereal production will have to increase by 85 and 50%, respectively, using the same currently available physical resources. Livestock can reduce poverty and food insecurity in most African and some Asian and Latin American countries. Also the different livestock regions can be threatened by the growing biofuel trends. Globalization is increasing sanitary risks and agriculture and livestock systems are becoming highly vulnerable to climate change. All these require collective efforts between the public and private sector and respective stakeholders in designing appropriate research, training and outreach services. Also, biotechnology applications to produce desired product traits are now seen as important tools. In conclusion, it is evident that animal production will continue to contribute to the wellbeing of the human kind, but it is also challenged by social, technological, biological, environmental and economic factors that should be dealt with integrally and via regional cooperation and technological and information sharing.

Key Words: Climate Change, Globalization, Biotechnology

673 Farm animal welfare: The science behind the standards. D. Fraser*, *University of British Columbia, Vancouver, BC, Canada.*

Three broad types of research have been used in the development of "science-based" animal welfare standards. One body of research focuses on the basic health and functioning of animals; it relies on measures such as freedom from disease and injury, indicators of "stress", and rates of survival and growth. Other research looks at the ability of animals to live in reasonably "natural" ways; it uses the performance of natural behavior (especially behavior that animals are highly motivated to perform) as indicating good welfare, and abnormal behavior as indicating the reverse. A third body of research focuses on the "affective states" of animals, especially states of pain and distress; it attempts to identify and quantify such states through a combination of behavioral and physiological responses, and to develop practical mitigative measures. All three of these types of science have been used in animal welfare standards, but they sometimes lead to different requirements because they involve the pursuit of different (although often overlapping) animal welfare

objectives. In order to prevent confusion arising from the conflicting requirements, we need to be clear about the specific animal welfare objectives that different standards are designed to address.

674 Strategies to improve animal welfare in poultry production: From science to practice. J. A. Mench*, *University of California, Davis.*

It is estimated that approximately 23 billion poultry are produced worldwide each year. The poultry industry is diverse and is involved with the production of eggs, meat, and byproducts (e.g. feathers) from a variety of species, including chickens, turkeys, ducks, ratites, and game birds. As consumer demand for poultry products has continued to grow, rearing practices have become increasingly intensive in most segments of the poultry industry in many countries. In turn, this has led to increasing concerns about poultry welfare among consumers and food retailers, and a concomitant attempt to eliminate or modify certain production practices via legislation, retailer purchasing specifications, labeling programs, and/or voluntary or audited guidelines. This has been paralleled by an explosion of research on poultry welfare, particularly on topics related to behavior and health. To what extent has science played a role in these regulations, standards and guidelines, and how has that science been translated into day-to-day practice in such a way as to improve poultry welfare? This question will be discussed with regard to three particularly controversial practices: housing laying hens in cages, the production of foie-gras from ducks and geese, and the use of electrical stunning in processing plants to induce insensitivity prior to slaughter in broiler chickens and turkeys.

Key Words: Poultry, Welfare, Guidelines

675 Strategies to improve animal welfare in farm animals: From science to practice. X. Manteca^{*1}, A. Bach², S. Calsamiglia¹, A. Ferret¹, J. Gasa¹, and B. Jones³, ¹*School of Veterinary Science, UAB, Bellaterra, Barcelona, Spain, ²IRTA-Unitat de Remugants & ICREA, Barcelona, Spain, ³Animal Behaviour & Welfare Consultant, Edinburgh, Scotland.*

Concern about the welfare of farm animals has increased in many countries over the last decades and animal welfare is fast becoming a global issue. Strategies intended to improve farm animal welfare can be divided into three main categories: improving the quality of stockmanship, improved housing and husbandry, and genetic selection. Fear of human beings is often a major welfare problem in farm animals that has marked negative consequences for production. Fear of humans is largely determined by the behavior of the stockpersons, which normally reflect their beliefs, attitudes and skills. Therefore, training programmes aimed at improving stockmanship have a very positive impact on the welfare of animals. To be fully effective, these must be tailored to the production system and the characteristics of the producers in each country. Improved housing and husbandry is the most frequently used strategy for enhancing farm animal welfare. The range of strategies may vary substantially from those requiring significant changes in the production systems (such as replacing stalls for pregnant sows by group housing

systems) to very moderate alterations, such as increasing feeding space for beef cattle. Although enhanced housing and husbandry practices are undeniably effective in many circumstances, they may have a high economic cost that hampers uptake. Genetic selection is becoming an increasingly important tool for improving farm animal welfare. It can be applied with two different aims: firstly to prevent the negative consequences that selection for certain production traits may have on animal welfare (such as increased prevalence of lameness in broilers due to selection for rapid growth) and to select animals that are better able to cope with existing production systems and perhaps future developments. Examples of the latter include selection for reduced aggressiveness in pigs and for greater sociability in dairy cows.

The categories of welfare improvement strategies mentioned above will be illustrated with examples from work done in the research project Welfare Quality®.

Key Words: Animal Welfare, Farm Animals, Welfare Quality

676 On farm assessment of animal welfare: The ‘Welfare Quality’ experience in the EU. L. J. Keeling*, Swedish University of Agricultural Sciences, Sweden.

The project ‘Integration of animal welfare in the food quality chain: from public concern to improved welfare and transparent quality’ (Welfare Quality®) has become the largest piece of integrated work yet carried out in animal welfare in Europe, involving 44 research groups from 17 countries. The main aims are: to develop practical strategies/

measures to improve animal welfare, to develop a European standard for the assessment of animal welfare, to develop a European animal welfare information standard and, to integrate and interrelate the most appropriate specialist expertise in the multidisciplinary field of animal welfare in Europe. Effort is focused on three main species and their products: cattle (beef, dairy and veal), pigs and poultry (broiler chickens and laying hens).

A starting point was that animal welfare is an important part of an overall “food quality concept”. Analyses of public perceptions and attitudes were combined with existing knowledge from animal welfare science and 12 areas of concern that should be covered in measurement systems were identified. To address these areas of concern, 20-30 performance (animal-based) and design measures for each species were selected for inclusion in pilot systems being applied in practice this year. Further fine tuning of the systems will take place. Population surveys have explored the extent of social engagement in farm animal welfare issues and how this is reflected in everyday consumption practices and there have been studies of the supply chains for welfare-friendly products. Clear differences between countries were apparent so strategies to implement welfare schemes under specific conditions of consumer, distributor and producer expectations are being formulated. Work with a formal standard setting body to create the basis of future technical standard documents has also started and the potential importance of such harmonised standards in the setting of future European legislation has been recognised. Future work will focus on further development of the welfare measurements and improvement strategies and on establishing implementation strategies.

Key Words: Welfare, Wellbeing, Monitoring