STEWARDSHIP AND STOCKMANSHIP IN SUSTAINABLE FARM ANIMAL PRODUCTION

SZÜCS, E.[1,2] –GEERS, R[3] –SOSSIDOU, E N. [4]

[1]University of West Hungary, Faculty for Agricultural and Food Science, Mosonmagyaróvár, Hungary
[2]Szent István University, Faculty for Agricultural and Environmental Science, Gödöllő, Hungary
[3]Katholieke Universiteit Leuven, Laboratory Quality Care Animal Production, Lovenjoel, Belgium
[4]National Agricultural Research Foundation, Veterinary Research Institute.
Ionia, Thessaloniki, Greece

Summary

The paper addresses ethical concerns and ideas to identify key elements that constitute the concept of sustainable animal production. Pillars for sustainability in animal production cover two terms such as stewardship and stockmanship. Future implications towards sustainability in animal production may have more concern to stewardship coupled by stockmanship, responsibility, consciousness and morality. In conclusion, the moral as basic concept of sustainability is to maintain continuous development in harmony with the nature to meet requirements of living creatures including both human beings and animals to live in and steward. Moving toward sustainable animal production our duties and obligations addresses careful and responsible management. Farm animals are sentient creatures, therefore attention has to be paid to a variety of factors, such as standards of stockmanship especially animal welfare.

Relevance

Sufficient food supply for all humans was, is, and will remain one of the main priorities for mankind. The choice between food from crops or animals is related to philosophical, religious, ethical, but also cultural and economical values. However, the concept of sustainable agriculture takes into account the organisation of food supply through future generations. Not only quantity, but also quality is important, especially in relation to food safety and the method of production. Specifically, the aspect of animal welfare is becoming more and more important with the focus on stewardship and stockmanship, i.e. human's responsibility for their animals. The issue seems to have a global concern and includes a wide range of biosciences, ecology, philosophy and theology. Basic principles have to be cleared as human beings are responsible for the created world: "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground" *(Genesis 1:28)* prompting several questions such as that freedom may have limitations in the created world depending on our views and way of thinking. In other words "it is man's responsibility to cultivate, protect the Earth and take care of it" (*Genesis 2:15*). Man is part of nature, his right of disposal is limited, he has to take responsibility for other human beings, animals, plants and inanimate nature" (Holy Bible "*New international Version", 1984*). The statement refers to the term of stockmanship: our job to take care of nature including farm animals. Considering the terrifying horror the mankind has to face with, the human society has to cope with ecological crisis. From ecological point of view it means lack of commitment. Consequently, human beings to save, preserve and sustain the nature *(Bolyki, 1999)*. The present status of deep ecological crisis may be the consequence of the false view that it can be restricted only to technical treatment. The crisis of nature equals to crisis of our culture and not only that of technocracy *Bolyki (1999)* stated.

As far as the post modern era is concerned *Wals and Bawden (2004)* listed views on the significance and quintessence of agricultural sustainability as follows: (1) for protectionists sustainability relates to sufficient food supply. For them agriculture is simply an instrument for food just for continuous increase of agricultural productivity by sustaining capacity of technological innovation. (2) Others recognise sustainability within an ecological scope and concern minimising disruptions of biological ecological balance. (3) The concept of sustainability is even further extended by *Douglass (1984),* his term includes "promoting vital, coherent, rural cultures, and encouraging the values of stewardship, self-reliance, humility and holism which have been most associated with family farming". (4) Formulation of Cotgrove (1982) and *Miller (1983)* on environmental problems within agricultural practice reads as being "rooted in individual conciseness and mortality; in a reflection of our twisted, mentalities". Thus, views on sustainable development can be classified in an ethnocentric, ecocentric, holocentric and egocentric way *(Bawden, 1997)*.

These days social-economic framework suggests that all value, economy, income and property would belong exclusively to humans without any responsibility towards their fellow-men and created nature, even though their freedom should aim to serve the community using the values given us for use according to instructions to regulate economy to avoid social injustice. In line with the criteria the most often definition on sustainable agriculture reads as an agriculture system that incorporates the best economics, environment, and social issues. Economics have to include long term profitability and quality of life, environment has to look at the long term impact of farming systems on ecosystems, and social issues should take into account the long term community building aspects. Thus, human beings have a unique role in the world namely stewardship. The term stewardship includes human beings' duties and responsibilities, how one behaves towards the natural environment even under the pressure of discrepancies of economical and ecological pressures *(Ruissen, 1998)*. *Webster (2007)* formulated two fundamental starting principles in relation to the ethics and values for keeping animals:

- human beings have moral right to rear other species for the production of food, and
- majority of animals for food are sentient creatures with capacity to experience well-being and suffering.

The novel consumer oriented approach of rural development is tending to culminate in business. "With the advent of money economy, the most tragic human paradox has been accomplished: virtual wealth can be indefinitely accumulated in the form of money, whereas real wealth in the form of bio-physical, non material richness and earth habitability can be increasingly destroyed" (Wals, et al., 2004a,b). Consequently, humans have moral responsibility to recognise the nature and implications of sentience in farm animals. In this regard, farms should not be viewed simply as food factories, but as one of the most powerful forces for good or bad in relation to environmental quality. Farmers are the stewards of the land for all of us, for ever. However, we cannot expect them to sustain and enrich the quality of the living environment simply on the money that we - the consumers - pay them for producing food as a commodity.

The landscape is characterised by a range of diverse farming systems. These relate not only to varied geographical environments, but also to different social and cultural environments for farming. Increased demand for a plentiful supply of cheap food that also maintains a diverse and sustainable supply represents a challenge for livestock farming, demands for high welfare

production systems and the maintenance of landscapes in the face of outbreaks of animal diseases and of increasing international competition. These are also challenges for the livestock breeding, which challenges, however, also present opportunities. New technologies, however, can stir strong emotions, demands and ethical standards. Attempts have already been made to bring together a wide range of interested parties to produce a vision of how livestock breeding might develop in the next 20 years, and to constitute the first step in achieving the goals *(Potočnik (2006)*. Factors that have to be taken into consideration are discussed and listed in the publication "Sustainable Farm Animal Breeding and Reproduction. A *Vision for 2025"* (published in *2006*): such as (1) sustainable breeding and reproduction; (2) integration into animal agriculture; (3) safe and healthy food; (4) healthy animals with high adaptation ability; (5) balanced breeding and biodiversity; (6) social responsibility; (7) competitiveness; (8) and benefits of diversity formulated within a wide range of disciplines from genetics to socio-economic issues. The implementation for the vision for 2025 would last from innovation to delivery focussing on strategic priorities in line with Europe's main short-, medium-, and long-term animal breeding and reproduction objectives in order to

- produce better-quality, healthy, affordable, diverse food offering consumers in and beyond Europe real options for improving their quality of life;
- strengthen animal production through improved breeding and reproduction in their interactions with other fields;
- promote environmental agricultural sustainability, including new applications for pleasure, leisure, or in the medical area;
- enhance the competitiveness of agriculture organisations.

Requirements towards sustainable food has been summarized by *Levett and Therivel (2005)* as follows:

- produce safe, healthy products in response to market demands, and ensure that all consumers have access to nutritious food, and accurate information about food products;
- support the viability and of rural and urban economies and communities;
- enable viable livelihoods to be made from sustainable land management, both through the market and through payments for public benefits;
- respect and operate within the biological limits of natural resources;
- achieve consistently high standards of environmental performance by reducing energy consumption, by minimising resource inputs, and use renewable energy wherever possible.
- ensure a safe and hygienic working environment and high social welfare and training for all employees involved in the food chain.
- achieve consistently high standards of animal health and welfare.
- sustain the resource available for growing food and supplying other public benefits over time, except where alternative land uses are essential to meet other needs of society.

In response to the challenge of *Agenda 21* and in the context of the world exposition Expo 2000 in Hannover, with the theme "Humankind - Nature - Technology" a Research Consortium "Sustainable Animal Production" has been established to seek develop and disseminate a global vision of animal husbandry and health based on scientific facts *(Visions for the 21th century, 2008)*. The aim was to discuss the production of animals and food derived

from animals, e.g. animal and food sciences, agriculture, veterinary medicine, biology, sociology, political science, agronomics, ecology and others in relation to sustainable development. In addition, the global challenge for the next century has already been formulated in Rio de Janeiro, and develop a global vision of modern intensive animal production that is grounded in scientific fact and committed to finding solutions for the world food crisis. The aim is to develop sustainable animal production systems which preserve the basis of life of future generations.

Topics having been discussed are:

- animal production and world food supply
- globalisation, production, and competitiveness
- product safety and quality assurance
- livestock farming and the environment
- health and welfare in farm animals
- advances in biotechnology in livestock
- animal breeding and animal genetic resources
- animal nutrition: resources and new challenges
- safeguarding animal health in global trade
- bonds between animals and humans.

The time being there has been a tremendous increase in the consumption of food of animal origin *(Money and Neville, 2008)*. To meet the growing requirements for production is projected to double by 2020. Factory farming of animals takes place in large scale systems, where animals are raised in confinement of high capacity operations. The trends and structural changes have enormous consequences for society and the Earth system. Considerable impacts affect the quality of the atmosphere, water and soil due to nutrient overloads and terrestrial ecosystems directly and indirectly. Issues address:

- atmosphere, water and soil
- interactions with coastal and marine systems
- global trade in animal products and feed grain, resource use, subsidies and demand for food and feed grain
- human health (zoonoses, food safety, occupational health, nutritional quality, public health impacts)
- animal health (disease control and prevention) and welfare (stress and well-being)
- economic and social systems (local to global scales)
- institutional dimensions (Industry influences, regulatory enforcement)
- scenarios including global development, ecology and human well-being
- national differences.

Animal wastes from large scale operations exceed assimilation capacity of surrounding landscapes resulting in pollution of air, soil and water affecting both humans and wildlife. Large scale animal production reduces production cost of meat, milk and eggs. In a global economy this can lead to increased international trade in the products and in the feed grains involved affecting the supply of grain available for humans. Industrialized animal production systems have direct and indirect impacts on human physical and psychological health. Further problems may be due to use of antibiotics, hormones and various chemical compounds in animal production systems having serious impact on human wellbeing. Large scale animal

production may have potentially impact on health status and welfare of animals. Concentrations of livestock increase animal stress, the risk of infection, and promote disease transmission. There are ethical and public health concerns, too. Animal production systems have varied through time and among nations and cultures. Therefore multi-scale approach to assessing practices and economies is needed to highlight responses to demands and to the role of large factory farming in Brazil, China and other countries, too.

Basic pillars for (1) sustainability in animal production address two terms such as (2) stewardship and (3) stockmanship.

For this reason future implications towards sustainability in animal production may have more concern to stewardship paired by stockmanship, responsibility, consciousness and morality. In conclusion, the moral as basic concept of sustainability is to maintain continuous development in harmony with the nature to meet requirements in the world for living creatures including human beings to live in and steward. The message of this statement does not mean endless exploitation of natural resources, on the contrary it equals stewardship supported by stockmanship and responsibility of challenge for our moral obligations considering in one hand of world hunger and the other hand the intemperate prodigality. Stewardship refers to management's responsibility to properly utilize and develop its resources. In commercial practice sustainability includes stewardship, a term currently being used to describe sustainable agricultural techniques that may accomplish to continue without causing damage to the environment recognizing that animal producers have a role to play as moral stewards, an assumption of responsibility for the welfare of the world due to our moral obligations. Sustainability means making something continue and maintain to exist for a period of time such as economic development e.g. animal production within agricultural activity. When it comes to animal sustainability, it means having the ability to maintain long term profitability while maintaining the natural resources of different kinds. Movements for sustainable agriculture are making enhancing efforts in paving the way and acceptance sustainability within food production addressing many environmental and social concerns, and offering innovative and economically viable opportunities for growers, labourers, consumers, policymakers and stakeholders in the entire food system from fork to farm.

In the way towards sustainability in animal production stewardship has to be supported by stockmanship in an effort to identify skills and competencies in commercial practice through the full food production chain of animal origin, and suggesting practical steps that may be appropriate for them in moving toward sustainable animal production. When doing this our duties and obligations address careful and responsible management. Farm animals are sentient creatures. Therefore attention has to be paid to a variety of factors, such as standards of stockmanship, especially animal welfare. Good welfare status can be achieved through a high standard of stockmanship, effective management, adequate housing and well-maintained equipment. The knowledge to attain such a standard of welfare is available and how conditions may be met requirements. The welfare of farm animals can be assessed in the context of the guidelines known as the Five Freedoms:

- Freedom from hunger and thirst
- Freedom from discomfort
- Freedom from pain, injury and disease
- Freedom to express normal behaviour
- Freedom from fear and distress

The key to animal welfare is stockmanship: „Stockmanship, plus the training and supervision necessary to achieve required standards, are the key factors in the handling and care of livestock. A management system may be acceptable in principle but without competent, diligent stockmanship the welfare of animals cannot be adequately safeguarded. We lay great stress on the need for better awareness of welfare needs, for better training and supervision" as it has been declared by the Farm Animal Welfare Council, an independent Advisory Board established by the British Government in 1979 (FAWC, 2008).

Requirements are as follows:

(1) Animals should be provided by adequate management and stockmanship which ensure that appropriate quantities of suitable feed and water are available daily and are distributed in a manner which facilitates access for all animals. Improvements in understanding of digestive physiology and nutrient requirements. Properly managed livestock should not suffer from inadequate nutrition.
(2) Provision of artificial protection from the weather conditions where no natural shelter is available. When housed, a well-ventilated shed, a comfortably bedded, dry lying area and frequently cleaned passageways are necessary to avoid discomfort and to reduce the risk of injury.
(3) In diseases we need better understanding of the causes. The problem can be resolved by improved environment, nutrition and breeding. The incidence of infectious diseases can, in many cases, be reduced by routine preventive actions.
(4) When housed, it is essential that building design and good stockmanship allow animals to behave naturally and do not adversely affect their welfare.
(5) Fear and distress is seldom completely unavoidable in any husbandry system. Stockpersons can minimise fear and distress by careful supervision and by sympathetic handling.

References

Bawden, R.J.: Learning to persist. In Stowell, F.A., Ison, R.L., Armson, R., Holloway, J, Jackson, S. & McRobb, S. (Eds) Systems for sustainability: People, Organizations and Environment, 1997. New York, Plenum 1-5.

Bolyki, J.: „Teremtésvédelem" – ökológiai krízisünk teológiai megközelítése. Budapest, 1999. Kálvin János Kiadó, 239. p. ISBN 963-300-779-8

Cotgrove, S. F.: Catastrophe or cornucopia: The environment, politics, and the future. 1982. Chichester Sussex ; New York: Wiley.

Douglass, G. K.: The meanings of agricultural sustainability. pp. 3-30. In: G. K. Douglass (Ed.) Agricultural sustainability in a changing world order. 1984. Westview Press, Boulder, Colorado.

Levett, R., Therivel, R.: Sustainability implications of the Little Red Tractor Scheme. Report for the Sustainable Development Commission. 2005
http://www.sustainablefood.com/sfdf.htm (01/05/2008)

Miller, A.: The influence of personal biases on environmental problem-solving. Journal of Environmental Management. 1983. 17: 133–142.

Money, H. and Neville, L.: Consequences of Animal Production Systems.
http://www.icsu-scope.org/projects/cluster1/ciap.htm (14/05/2008)

Potočnik, J.: Sustainable Farm Animal Breeding and Reproduction. A Vision for 2025. Working Group "FABRE Technology Platform" February 2006. FABRE Technology Platform © 2006. ISBN 90-76642-23-0
http://www.fabretp.org/ (03/05/2008)

Ruissen, H. J. A.: Béres és sáfár: a mezőgazdaság bibliai szemszögből. Európai kérdések, református válaszok. A Reformátusok a Közéletben Alapítvány és az SGP konferenciája, Gödöllő, Agrártudományi Egyetem, 1998. november 20-21. 51-60. ISBN 963 00 2289 3

Ruissen, A. and Bawden, R.: Sustainability in higher agricultural education: stepping stones for curriculum development. Capitalising on innovation in curriculum in European Higher Education. Practice and promise in the disciplines of Agriculture, Aquaculture and Environmental Sciences. Proceedings of the AFAnet – ICA Conference held at the University of Gent, Belgium, 8 to 10 January 2004. ISBN 2-905267-45-3. Institut National Polytechnique de Lorraine (INPL), France, 21-38. (a)

Wals, A. E. J., Caporali, F., Pace, P., Slee, B., Sriskandarajah, N., Warren, M.: Education and training for integrated rural development. Stepping stones for curriculum development. Elsevier, The Netherlands. 2004. (b)

Webster, J.: New trends in animal welfare. XIII International Congress in Animal Hygiene. Animal Health, Animal Welfare and Biosecurity. June 17–21, 2007, Tartu, Estonia Proceedings, Volume 1, 39-48. ISBN 978-9949-426-30-0 (vol.1.)
http://www.feedinfo.com (13/05/2008

– : Five Freedoms. Farm Animal Welfare Council (FAWC).
http://www.fawc.org.uk/freedoms.htm (23/07/2008)

– : New International Version (NIV Bible). International Bible Society. (1984)
http://www.ibs.org/niv/ (27/05/2008)

– : Visions for the 21th century. Virtual Conference Sustainable Animal Production. October 1999 – March 2000.
http://agriculture.de/acms1/conf6/index.htm (03/05/2008)