

International Animal Agriculture Symposium: Sustainable animal agriculture, national and international prospective

117 A global overview of sustainability in animal agriculture systems. C. de Haan*, *World Bank*.

The strongly increasing demand for animal products in developing countries presents exciting opportunities, but also serious challenges to the socio-economic and environmental sustainability of four main global animal agriculture production systems. This paper will argue that in those systems, the policy and institutional framework will largely define the sustainability of the technology being adopted. In arid range lands, institutional failures in the management of resource access, climatic variability and markets, are serious threats, but new forms of risk management and enhanced integration of animal agriculture with environmental services, offers interesting opportunities, as will be shown in the paper by examples from East Africa. In smallholder mixed farming, animal agriculture is a key contributor to sustainable nutrient and energy flows of about 100 million smallholdings, but labor productivity and land tenure are key conditions for long term sustainability of those systems, as will be demonstrated in the paper by the example of smallholder dairy in India. Animal agriculture is a serious threat to some of the worlds most valuable ecosystems in the humid savannahs and tropical rainforests, but innovative systems for payment of environmental services can result in "win-win" situations, as demonstrated by the increase in income and contribution to bio-diversity conservation and global climate change on small ranches in Central America. Finally, probably the most serious threat to environmental sustainability is nutrient loading of land and water, caused by emerging large scale intensive production units, favored by skewed incentive systems and poorly enforced zoning regulations. Different policy instruments, being developed in East Asia, will be presented to "level the incentive playing field" between small holders and large scale farmers, and arrive a more sustainable spatial distribution of these units.

Key Words: Global livestock systems, Sustainability, Policies and technologies

118 Is rangeland agriculture sustainable?. R. K. Heitschmidt*, L. T. Vermeire, and E. E. Grings, *USDA-ARS, Fort Keogh LARRL, Miles City MT*.

Agricultural enterprise sustainability is most often assessed by examining long-term ecological sustainability, short- and long-term economic viability, and social acceptance. From an ecological perspective, rangeland agriculture (i.e., managed grazing) is deemed fully sustainable providing the rangeland resource is sustained. This is because grazing is a natural ecological process that has impacted the evolutionary history of all natural ecosystems. Because the magnitude of the evolutionary impacts of grazing by large herbivores varied greatly among ecosystems, sustainable levels of livestock use vary greatly, and, in turn, alter levels of ecological and economic risks. These risks can be diminished by the infusion of exogenous energies, primarily fossil fuels, into the system, but the long-term economics of this strategy are questionable. The sustainability of rangeland agriculture is further challenged by economically viable alternative uses of rangelands (e.g., expansion of suburbia, ranchettes, single use recreation, etc.) and economics of scale with low diversity, medium-sized ranching enterprises facing the greatest challenges. The challenges associated with social acceptance of rangeland agriculture also continue to increase as various factions of society vigorously oppose rangeland agriculture, particularly on Western U.S. public lands. Some view this position as largely driven by emotion, but in reality it is simply a reflection of differing value systems. Thus, we doubt this position will be abandoned in the near future and, as a result, a shift in the geographical span of rangeland agriculture across the U.S. may occur. However, this conclusion may become folly if the cost of fossil fuels increased to a level whereby substitute feeding of grains would become cost prohibitive, thereby encouraging a return to more "natural" animal production systems that rely largely on grazing of rangeland ecosystems.

Key Words: Ecology, Economics, Grazing

119 Contribution of animal agriculture to sustainable systems. E.R. Orskov, *Macaulay Institute*.

The contribution of animals to sustainable agriculture is discussed with emphasis on the animal in their natural interactions with soil and plants. The separation of animals in particular ruminants from this interaction in many countries is not sustainable and lead to poor resource management i.e. manure becomes a waste product rather than a resource and crop residues in arable areas with no animals become poorly utilised. Examples of animal production systems in positive interaction with plants and soil will be illustrated as well as animals contributing to the many diverse animal products which must be considered in the context. On a global scale the animal contribution to security is probably the largest product. Sustainable agriculture, Animal contribution

120 Sustainable animal agriculture: Economic perspectives. M. Garcia-Winder*, *Inter-american Institute for Cooperation in Agriculture, Costa Rica*.

Livestock production is an important component of the rural sector in the developing countries. Its importance goes beyond the traditional concept of economic/financial gains. It is estimated that over one sixth of all international agricultural trade is accounted by trade of livestock and livestock products. The pressure to liberalize world trade is producing dramatic changes in the way livestock production takes place as industrialized countries continue to use excessive amounts of subsidies, less developed countries are forced to find alternatives for their animal production systems. The most notable changes will be brought about by the need to comply with international agreements, pressure to preserve and improve the environment, and pressure from consumers. As consequence the development of economically, socially and environmentally sustainable production systems will be based in exploiting local comparative advantages.

Key Words: Sustainable animal agriculture, Economics

121 Redirecting government policies to ensure agricultural sustainability. J. Ikerd*, *University of Missouri*.

American agriculture is in crisis. Without current farm subsidies, which are among the largest in the world, the financial situation today would be no better than during the farm financial crisis of the 1980s. The Farm Security and Rural Investment Act of 2002 does little more than formalize the annual "emergency bail out" process of the failed Freedom to Farm Act. The "lions share" of subsidies and benefits will continue to go to wealthy landowners and corporate agribusiness, not to family farmers.

Current U.S. farm and agricultural trade policies are based on the faulty assumption that American farmers can compete in a global free market. In fact, U.S. farmers have lost their global competitive advantage. Land and labor costs are far lower in other major agricultural areas of the world and are likely to remain so. Agribusiness corporations are shifting their capital and production technology to those areas. Current farm policies, coupled with global free trade policies, could mean the end of American agriculture, thus threatening American's food security.

Thankfully, a different philosophy of farming is emerging in response to the growing economic, ecological, and social problems arising from the industrial agricultural paradigm. Thousands of farmers, calling themselves organic, holistic, practical, or just family farmers, are creating "the new American farm." New livestock producers may promote their products as grass-fed, free-range, hormone and antibiotic free, or humanely raised. But these farmers are all pursuing approaches to agriculture that are more ecologically sound, economically viable, socially responsible, and thus, more sustainable.

Free markets provide no incentives for farmers to take care of the land, to maintain a rural culture of stewardship, or to provide food security for all, in times of crisis or tranquility. Thus, farm programs should be redirected to encourage these "public benefits", to reward farmers for their contribution to long run food security. Trade policies should be redirected to ensure the rights of all nations to protect their resources and their people from exploitation. American farm and trade policies must be fundamentally changed.

Key Words: Sustainable agriculture, Farm policy, World trade