

Animal health: keystone in the sustainability and competitiveness of the livestock sector

Salud Animal: Piedra Clave en la Sostenibilidad y Competitividad del Sector Pecuario

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Summary

The rapid expansion of human population in the world, combined with enhanced economic capacity of developing nations, is resulting in an unprecedented demand for meat production with increased competition for land, water and energy, requiring enhancements in the sustainability of livestock practices. At the same time, globalization of world economies is creating challenges and opportunities to the livestock sector to be more competitive in regional, national and international markets. Animal health is critical for the sustainability of the livestock sector. Unthrifty animals cannot reach their genetic potential for productivity requiring more inputs of land, energy and water for the same amount of product output. The impact of poor animal health goes beyond the decrease sustainability of the livestock sector, but affects also wildlife conservation and exacerbates poverty as low-income populations divert on subsistence from bush meats. In the same way that poor health affects the sustainability of livestock production, poor animal health significantly affects the competitiveness of the livestock sector. Due to mortality and/or chronic morbidities, unhealthy livestock industries lead to less quantity and quality products reaching the local and national markets with little or no opportunities of profiting from the benefits of international trade.

Resumen

La rápida expansión de la población humana en el mundo, junto con la mejora de la capacidad económica de las naciones en desarrollo, está dando lugar a una demanda sin precedentes de la producción de carne con el aumento de la competencia por agua, tierra y energía, lo que requiere mejoras en la sostenibilidad de las prácticas ganaderas. Al mismo tiempo, la globalización de la economía mundial plantea desafíos y oportunidades para el sector ganadero para ser más competitivos en los mercados regionales, nacionales e internacionales. La sanidad animal es fundamental para la sostenibilidad del sector pecuario. Animales insalubres no pueden alcanzar su potencial genético de productividad requiriendo más insumos de tierra, agua y energía para la misma cantidad de producción. El impacto de las deficiencias en salud animal van más allá de la disminución de la sostenibilidad del sector pecuario, pero también afecta a la conservación de la vida silvestre y exacerba la pobreza ya que las subsistencia de poblaciones de bajos ingresos dependen en un mayor grado de las carnes de monte. De la misma manera que deficiencias en la salud afectan la sostenibilidad de la producción animal, una salud animal deficiente afecta de manera significativa la competitividad del sector pecuario. Debido a la mortalidad y / o morbilidad crónica animal el sector pecuario produce una menor cantidad y calidad de productos dirigidos a los mercados locales y nacionales, con poca o ninguna oportunidad de sacar provecho de los beneficios del comercio internacional.

Introduction

There is little question about the fact that the entire global food system is experiencing an unprecedented confluence of pressures and demands that will continue to affect livestock production for the next 3 or 4 decades (1). This is the result of increase demand of food due to a rapid expansion of the human population, many of them with increased economic capacity demanding a more varied diet of higher quality, adding pressure to increase production of food, and to increased competition for land, water and energy. These are issues directly related to the sustainability of the livestock sector (2).

At the same time there is an increased globalization of trade of animals and livestock products, creating newer demands in quality, reliability of supply and compliance with international sanitary standards. These issues are then directly related to the competitiveness of the livestock sector.

A common and critical component of these two general complimentary demands for the livestock sector, sustainability and competitiveness, is the issue of animal health. This paper will try to illustrate why animal health is the “keystone” holding together the future of the sustainability of the livestock production and the competitiveness of the livestock industries, particularly in regard to international trade.

Animal health and the sustainability of livestock production

As it would probably be mentioned by many other participants to this conference, “Sustainability” encompasses all production activities that must be implemented to assure that the ability of future generations to meet their own needs is not compromised (3). It is also generally understood that sustainability activities fall within three main areas: environmental health, economic profitability and socioeconomic equity (4).

Animal health is a key element in the sustainability of livestock production. The term

“animal health” should be understood in its broadest sense, not just the absence of disease. “Animal health” should be considered as a state of reaching the maximum genetic potential of animals while maintaining a high level of welfare and productivity. In that sense, good genetics that express the maximum biological value for a given trait (e.g. milk, meat, wool, hair, etc.) are not enough if the husbandry practices, energy and water requirements are not adequate, or if the animals are suffering metabolic, oncogenic, toxic, parasitic, or infectious conditions, leading to unsustainable livestock production. At the same time a healthy animal with adequate nutrition and husbandry practices may lack the genetic potential for high levels of productivity and thus is also not contributing to a sustainable livestock production.

It is generally agreed that the human population may plateau around 9,000 million people by the year 2050 (2). That is almost a 30% increase in the number of people from today’s levels. Estimates of the impact of human population growth and demand for meat established in the late 1990’s accurately predicted the extraordinary demand of meat and other livestock products currently experienced particularly in the developing world (5). As our societies become more and more urbanized, the demand for quality foods (meats, eggs, milk and milk products) increases. All this has led to the so-called “Livestock Revolution” (6) characterized by rapid increase in the production of animals increasing the opportunity for animal disease outbreaks. This is exactly what has happened with the extraordinary increase in the production of chickens and ducks in east and south-east Asia that has led to the epizootics of avian influenza that have spilled over other continents of the globe primarily due to poor animal health infrastructure.

Given the costs of land, water, chemicals, energy, etc. needed for livestock production, any factor affecting the health of the animal may lead to less output (be it meat, milk, eggs, or fiber) per animal, thus decreasing the sustainability of such operation with detrimental impacts on the health of the environment (more land needed for same or less number of livestock) and on the social equity of the region. So perhaps we would need fewer production animals if we could have maximum production

levels from each animal with same or reduced energy, water and land inputs. A good example of the benefits of improved genetics, nutrition and health standards (including disease control and improved reproductive efficiencies) is that of the dairy industry. During the period of time of 1944 to 2007 we have experienced an extraordinary increase in the productivity of milk yield per cow. Today we can produce the same volume of milk with 79% reduction in the number of cows, consuming 77% less feed and 65% less water, using 90% less land (7). These gains constitute a very significant contribution to the sustainability of the dairy production sector.

Animal health deficiencies also have detrimental effects on wildlife conservation. In many poor areas of the developing world, uncontrolled animal diseases (even those easily controlled through prophylaxis in the developed world) are causing serious animal morbidity and mortality for marginal farmers. Because of their losses in their livestock and poultry resources they now depend on the harvesting of bush meats for subsistence. It is estimated that bush meat and wild fish provide 20% of the dietary protein for at least 60 low-income countries (2). This in turn is significantly reducing the number of wildlife species, many already in peril of extinction (8). Simple strategies, such as providing healthy chickens to villagers living on the periphery of national parks or wildlife preserves in some African countries have resulted in protection of wildlife and in improvements in farmers' nutrition by having a dependable quality source of animal protein for their diets. These interventions are also preventing the possibility of exposure of poachers and their families to serious zoonotic pathogens carried by the wildlife species hunted for subsistence (9).

Animal health also contributes to economic profitability and socioeconomic equity. Those are easy relationships to grasp as unthrifty animals produce less and have a lower economic value. Higher disease prevalence in animals in poor areas of the world, mostly due to lack of education and affordable access to veterinary care, is a major contributing factor in the perpetuation of socioeconomic disparities and the vicious cycle of poverty traps (10). This is particularly true for the

poorest of the poor all over the globe where animals are not only the source of nutrients (milk, eggs and occasionally meat), but are the proverbial "piggy banks" of portable wealth.

Animal health and the competitiveness of livestock production

It is generally accepted that the term "competitiveness of livestock production" refers the capacity of this sector to face challenges and opportunities to succeed economically in a world economy that has complex national and international dimensions in order to gain growth and prosperity.

Thus, competitiveness is a broad concept that encompasses a diverse range of factors and policy inputs including education and training, entrepreneurship and innovation, economics, sound regulations, and supporting legal and physical infrastructures (11). Because of these interactions, the competitiveness of the livestock sector requires coordinated actions: at the producer level; the producer sector; the marketing channels; as well as the entire set of animal health institutions and related government policies within the realm of the international rules for global trade.

In the same way that poor health affects the sustainability of livestock production, poor animal health significantly affects the competitiveness of the livestock sector. Due to mortality and/or chronic morbidities, unhealthy livestock industries lead to less quantity and quality products reaching the local and national markets with little or no opportunities of profiting from international trade benefits (12).

The challenges of competitiveness of the livestock sector are much broader than the challenges of reaching a sustainable livestock production. A progressive livestock producer could reach high levels of sustainability within their own resources and capabilities. However, the same livestock producer may not be able to reach full competitiveness for his/her operation without some societal commitment to, and investment in, transportation channels, abattoirs, distribution centers, a reliable cold chain infrastructure, market incentives for quality products, an educated and

discriminating consumer, a strong animal health infrastructure and a government's commitment to support the requirements of international trade. For most countries seeking the export of livestock and animal products, the most challenging hurdle is that of reaching acceptable levels of animal health and food safety that is demanded by importing countries.

When it comes to international trade, it is extremely important that all private, academic and governmental sectors that deal with livestock production be well coordinated. They need to develop a strategic plan for reaching the level of competitiveness needed to reach the requirements of the "Sanitary and Phytosanitary Agreement" (13) established by the World Trade Organization with compliance with the animal health norms outlined by the World Organization for Animal Health (OIE) (14) and the food safety norms from the *Codex Alimentarius* Commission (Codex) (15). A country or region may have the best of livestock production, but if they do not fulfill the international sanitary norms, they will be seriously handicapped in reaching their full potential for international trade of their livestock products. At the same time, countries may have a sanitary condition quite suitable for their products to reach international markets, however, they may not have the sustainable and sustained livestock production to be competitive in the global market. There has to be a well-orchestrated strategic balance of investments, public policy and producer-academia-government actions that support the full potential of a sustainable and competitive livestock production. In the middle of all these efforts is the issue of animal health, a true "keystone" in reaching the full success of livestock production.

Animal health challenges

Given the critical role of animal health, we should examine the challenges and opportunities for professionals in animal sciences and veterinary medicine in supporting the sustainability and competitiveness of the livestock sector. The first step in all of these challenges is to accept and recognize that animal scientists, whether experts on animal husbandry or in veterinary medicine,

are contributing to the protection and enhancement of animal health. They need to be at the table in discussions of major strategic policy decisions at the regional, national and international levels. At the same time, animal health professionals need to promote and embrace, with society in general, the concept of "One Health" (16) recognizing that animal health is intimately linked to human health as well as to environmental health. The complexity of disease outbreaks and endemicity has intricate connections with environmental, socioeconomic and anthropologic issues. Therefore, we would require a multidisciplinary approach to solve our challenges of livestock production in a sustainable and competitive way. Speaking as a veterinarian, it is important to pause and review the effects of our actions in the creation of a large number of academic programs in veterinary medicine. During the last two decades there has been an extraordinary explosion in the creation of veterinary schools all over the world (17), a phenomenon that is fueled in great part by private for-profit universities, with very limited resources to teach veterinary medicine, one of the most costly and intense academic endeavors when done properly and at high academic standards. What the world needs is not more veterinarians, but rather better educated and trained veterinarians. The competitiveness of a given country in relation to the international trade of animals and animal products is directly related to the animal health infrastructure of the region or the country and to the credibility and the competence of the veterinary profession. That is one reason why the OIE is trying to set minimum competence standards for the veterinary graduates (18).

Another common problem is the fact that in many countries, particularly those in development, there is a serious disconnect among all sectors of livestock production. It is common that those that teach livestock production and animal health at the university level are not connected to the research conducted at government centers or institutes; and they in turn are not involved in the development of public policies in conjunction with the government or the producers of different livestock commodities; with even less connection with the consumers of livestock commodities. One of the most successful models for this integration was initiated 150

years ago in the United States with the creation of the “Land Grant Institutions” (19). This was an initiative to use funds created by the sale of provided government lands to provide each State with an agricultural university where teaching, research and extension were to be integrated and coordinated for the benefit of society. The continuum of “discovery – education - outreach” continues to fuel the advances of the agricultural and livestock sectors in the United States making that nation one of the most competitive in the world. This integration also has influenced how agricultural (including livestock) policies have evolved and become implemented. Most of the regulations affecting the livestock sector, from standards for transportation and marketing, to disease surveillance and disease control, to successful disease eradication program, have been the result of discussions and compromises between the academic, state and federal governments, and livestock producers through the work of the United States Animal Health Association (USAHA) that this year had its 117th annual meeting (20). These interactions are beginning to happen in some other countries. The extraordinary advances in the control and eradication of Foot-and-Mouth Disease in South America only happened in a sustained way when all the sectors (producers, government and academia) became intimately involved. It is encouraging seeing the same efforts happening with other disease programs like Classical Swine Fever and Highly Pathogenic Avian Influenza. At the same time, we have witnessed effective multi-sectorial coordination programs that led to the successful eradication of New World Screwworm in many Central American countries failed to be sustained when dealing with other animal health challenges in the region.

Conclusions

The potential of Latin America as a major livestock-producing region of the world is well recognized (21). We have the natural resources and the human capital suitable for the challenges ahead. What is needed to be competitive in the international markets is a highly coordinated and collaborative technological and public policy

development involving all sectors, supported by cost effective infrastructures for transportation, for marketing cold chains, and for high quality meat and food processing plants.

The American continent is blessed with a good livestock healthy environment. We have fewer Transboundary Animal Diseases compared to Asia and certainly a fraction of the animal health challenges present in the African continent. We can foresee a day in the not distant future when the Americas become the first continent to eradicate Foot-and-Mouth Disease. At the same time we have to be very vigilant to prevent the introduction of many TADs that could reach our shores through a number of pathways related to our increased globalization.

However, all these potentials may not become a reality unless we maintain and enhance our investments in animal health, to protect and enhance the sustainability and the competitiveness of the livestock sector in our countries.

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