WEBINAR 2
“HEALTH AND DISEASES DRIVERS”

- SISTEMATIZATION REPORT –

Turrialba, Costa Rica
September 12th, 2023
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1. General Information

**Webinar Title:** Health and Diseases Drivers.

**Date and Time:** September 7th, 2023, 2:00 UTC +2 (Rome Time)

**Moderator/Facilitator:** Mariel Merayo, LLM / Danilo Pezo, Ph.D.

**Coordination:** Cristobal Villanueva, Ph.D. / Ileana Avalos, Ph.D.

**Panelists/Speakers:**

*Welcome Address*
- Shirley Tarawali, Chair GASL (Global Agenda for Sustainable Livestock).
- Muhammad Ibrahim, Director General. CATIE.

*Introduction*
Henning Steinfeld, Consultant GASL.

*Keynote Speaker*
Luis Barcos

Panelists
- Keith Sumption. Chief Veterinary. FAO
- Bernard Bett. Senior scientist Animal and human health. ILRI (International Livestock Research Institute)
- Alex Rinkus, Director of communication and stakeholders’ engagement. Health for Animals (Pharmaceutical Industry)
- Johnathan Rushton, Professor of Animal Health, and Food Systems Economics. University of Liverpool.

**Number of Participants:** 109 people connected.

2. Event Summary:

During the webinar on health and diseases drivers, the discussion primarily focused on the socioeconomic impacts of emerging diseases in pigs and poultry worldwide. Additionally, attention was given to the improper use of antibiotics and dewormers in livestock, highlighting the associated risks to public health, production costs, and market implications. The session also addressed the relationship between drivers of intensification, trade, climate change, and livestock production systems and their impact on the overall landscape. For instance, severe droughts in various parts of the world have prompted the introduction or increased population of other species with better functional adaptation traits. Similarly,
other factors such as pandemic threats, antibiotic resistance, promoting one health, market
dynamics, and available data for making informed decisions were given consideration.

It is vital to recognize that the health of livestock is intrinsically connected to the well-being
of families, national economies, human health, and the environment. Therefore, collaborative actions at the local, national, and global levels are imperative to control and eradicate diseases and promote good health practices in livestock. Taking a holistic approach is necessary to comprehend the societal implications, biodiversity considerations, as well as adaptation and mitigation strategies related to climate change in livestock production. Additionally, the implementation of traceability systems in countries is crucial to enhance consumer confidence in the market.

Furthermore, effective collaboration between public and private entities is vital in managing knowledge, regulations, policies, certifications for markets, veterinary services, laboratories, and other stakeholders involved in ensuring the better health of livestock. These collaborative efforts translate into the sustainability and resilience of agrifood systems worldwide.

### 3. Health and Diseases drivers

Table 1 presents a comprehensive summary of the drivers, accompanied by illustrative examples, and provides insights into their potential impacts.

Table 1. Summary of drivers mentioned in the presentations.

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Example</th>
<th>Operational impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensification</td>
<td>Improved productivity and market orientation.</td>
<td>Marginalization of small holder/pastoral systems</td>
</tr>
<tr>
<td>Pandemic threats</td>
<td>Covid19 and there is risk for new zoonotic diseases.</td>
<td>Impact in the livelihoods of 1 in 5 people in developing countries</td>
</tr>
<tr>
<td>Antimicrobial resistance</td>
<td>Withdrawal and dosage dates are not respected.</td>
<td>Access to market and public health risk. Importance of traceability.</td>
</tr>
<tr>
<td>Promoting One Health</td>
<td>A better balance among human, animal, and environmental health. Hypothesis or there is already sufficient evidence.</td>
<td>More scientific evidence is needed and the relationship with sustainability and resilience, education of the consumers around this approach, include this in the regulations and policies.</td>
</tr>
</tbody>
</table>
One could argue that seeking valid data for better decision making is a response to the other drivers, that later on becomes a driver when the data is available (just a comment for your consideration). This could be an argument; the scientific evidence is important to analyze / promote any drivers.

### 3.1 Drivers’ impact

**Intensification:** The risks associated with industrial production versus extensive production, particularly in relation to species such as pigs and poultry, were discussed. Highlighted examples include the intensification trajectories observed in countries like Australia, New Zealand, North America, and Europe. For instance, the occurrence of African swine fever in China resulted in a contraction of the sow population by 34%, a notable change in live pig prices (+88% nationally), and an increase in the inter-provincial live pig price gap (+46%).

**Pandemic threats:** The consequences of Covid-19 and the ongoing threat of new zoonotic diseases were emphasized. It is crucial to consider the following factors in this context: each year, 5% of new human diseases emerge, three of which originate from animals; 65% of human infectious diseases are zoonotic in nature; at least 75% of emerging human infectious diseases stem from animals; and 80% of potential bioterrorism pathogens are zoonotic.

**Antimicrobial resistance:** The misuse of drugs and the use of substandard products have led to the emergence and spread of antimicrobial resistance, resulting in significant socio-economic consequences. Disturbing situations have arisen, such as the practice of farmers

<table>
<thead>
<tr>
<th>Climate change</th>
<th>Heat stress, loss of adaptation, health.</th>
<th>Reduce animal production, family incomes and use new species in the landscape.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization and livestock trade</td>
<td>Traceability and stricter regulatory frameworks.</td>
<td>A risk of promoting informal trade</td>
</tr>
<tr>
<td>Market (consumers)</td>
<td>Sustainable products.</td>
<td>Developing value chain; demand of traceability. Not all farmers and other actors of the supply chain have access to technology and lab services.</td>
</tr>
<tr>
<td>Data available for better decision making.</td>
<td>Analysis to determine the relationship of diseases with production and income.</td>
<td>Prevention of economic impact and on animal and human health. What is happening in the countries / regions with little data.</td>
</tr>
</tbody>
</table>
mixing agricultural pesticides/veterinary drugs on their animals, which can have harmful effects on the animals and pose a public health hazard if these substances find their way into animal products. Examples mentioned include the use of acaricides to control ticks in cattle in developing countries, Denmark’s program to reduce antibiotic use in pig production, and the need for more antibiotics in the Dutch broiler industry due to fast-growing breed types.

**Promoting One Health:** The concept of One Health, which emphasizes integrated work at the human, livestock, and environmental levels, was discussed by speakers from organizations like WOAH (World Organization for Animal Health), FAO, and ILRI. While no case studies were presented, each pillar of the One Health approach was addressed individually. For example, the impact of poultry diseases on global hunger was highlighted (a 5% increase in 2019), and the environmental aspect was discussed in terms of how cattle diseases can increase greenhouse gas emissions.

**Climate change:** Climate parameters, such as precipitation, temperature, and relative humidity, have influenced the prevalence of disease vectors and pests. Consequently, altering the equilibrium of production systems, animal welfare, and public health necessitates adopting control strategies and production systems to address these impacts. An example discussed was African Trypanosomiasis, caused by the tsetse fly, which leads to a loss of 5 billion in GDP (Gross Domestic Product), poses a risk to 56 million cattle and 57 million people, and can be lethal. However, some countries like Kenya and Senegal have made progress in controlling or eliminating Trypanosomiasis.

**Globalization and livestock trade:** Globalization and livestock trade are interconnected, facilitating the global trade of livestock products, and increasing meat and dairy production and consumption. This has been influenced by factors such as the reduction of trade barriers and tariffs, improved transportation and storage technologies, and increased demand. While global trade brings positive efficiency and productivity benefits, such as greater availability, quality, and lower costs of food, it also carries negative implications, including the spread of animal diseases, environmental degradation, and greenhouse gas emissions.

**Market (consumers):** Restaurant chains offering sustainably produced animal-based food products are driving changes to expand sustainable livestock production. In the Latin American region, for example, there is an initiative where 100% of protein suppliers are audited by the AHW program, in accordance with the PAACO standard (Professional Animal Auditor Certification). Dairy ingredients are produced by suppliers who adhere to animal care and wholesome milk standards, and commitments have been made to a supply chain that is 100% cage-free eggs by 2025.

**Data available for better decision-making:** The effective use of data to improve decision-making in livestock health and disease is a complex task. However, utilizing data can enhance livestock health, productivity, and the prevention of disease outbreaks, protecting human
health. There are various data sources that can be leveraged to make informed decisions in livestock health and disease management.

By integrating data from these diverse sources, a more comprehensive understanding of the livestock health landscape can be achieved. This information can then be utilized to make informed decisions regarding disease prevention, control, and treatment. Several specific examples demonstrate how data can enhance decision-making in livestock health:

**Surveillance data:** Effective utilization of surveillance data can identify high-risk areas for disease occurrence, enabling targeted control measures to be implemented more efficiently.

**Clinical data:** The analysis of clinical data can contribute to the development of new diagnostic tests and treatment strategies for diseases. However, it is important to note that data availability, quality, and cost can be limiting factors in some countries.

**Genetic data:** Leveraging genetic data can help identify animals that are susceptible to specific diseases, enabling preventive measures to be taken proactively.

**Environmental data:** Analyzing environmental data can reveal factors that contribute to disease spread. This knowledge can guide efforts to mitigate those factors effectively. For instance, zoonotic diseases cause an annual toll of 2.2 million human deaths.

**Economic data:** Assessing the cost-effectiveness of different control measures using economic data aids decision-making. Such analysis helps prioritize the implementation of specific measures. For example, the outbreak of African Swine Fever (ASF) in 2019 resulted in an economic impact of $112.5 billion. In the case of cattle parasites in Brazil, it represents a cost of approximately $14 billion annually.

By harnessing the power of data, livestock health management can be significantly enhanced, resulting in more effective disease control and mitigation efforts.

**Existing Solutions**

<table>
<thead>
<tr>
<th>Driver</th>
<th>Solution to mitigate negative effects.</th>
<th>Successful program / project related to sustainability and resilience in livestock systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensification</td>
<td>Digital tools to enhance service delivery and biosecurity measures.</td>
<td></td>
</tr>
<tr>
<td>Pandemic threats</td>
<td>Biosecurity practices</td>
<td>PMP – TAB, poultry value chain Vietnam HPAI</td>
</tr>
<tr>
<td>Antimicrobial resistance</td>
<td>Educations, awareness, traceability</td>
<td>Denmark’s Antibiotic Reduction Program</td>
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</tr>
<tr>
<td>One Health</td>
<td>Any suggestions here? Investing in climate change adaptation and mitigation; promoting sustainable land use practices; better management of livestock operation; combating the illegal wildlife trade; strengthening global health surveillance and response systems.</td>
<td>ILRI has some programs and projects.</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Drought resistant breeds – goats, sheep, and camels – become the dominant species in pastoral systems.</td>
<td></td>
</tr>
<tr>
<td>Globalization and livestock trade</td>
<td>Traceability Equivalence Zoning and Compartmentalization</td>
<td></td>
</tr>
<tr>
<td>Market (consumers)</td>
<td>Any suggestions here? Diversification, differentiation, hedging, and innovation</td>
<td></td>
</tr>
<tr>
<td>Data available for better decision making.</td>
<td>Any suggestions here? Telematic devices, fleet management software, and data analytic tools</td>
<td></td>
</tr>
</tbody>
</table>

3.2 The Role of the Multi-Stakeholder Approach

There is significant interest among participating stakeholders, many of whom possess valuable expertise, in offering solutions to address healthcare and disease-related challenges within the regions. One noteworthy example is the enhancement of laboratory services and methodologies to elevate their quality. Additionally, the quest for improved accessibility to laboratory services underscores the significance of cost-effective approaches. The subsequent paragraphs illustrate collaborative efforts and experiences involving various actors along the supply chain.
**Global Burden of Disease (GBD):** GBD’s primary focus revolves around evaluating past animal health policies and projects, enhancing baselines for future investment assessments, and creating a more comprehensive mapping of animal health investments aligned with sustainable development goals. GBD is actively engaged in case study activities encompassing livestock populations, the animal health loss envelope, attribution by disease, as well as health problems and accidents. This initiative collaborates closely with government and private sector stakeholders in Ethiopia, Indonesia, the UK, and the EU, with expansion efforts underway in Australia, the Americas, and Senegal.

**Health for Animals.** Health for Animals collaborates with 50 countries, over 29 regional and national organizations, and partners with 10 major healthcare companies spanning more than 100 countries. The central theme of this collaboration revolves around health and disease-related issues, and their intricate connection with socioeconomic and environmental benefits.

**Arcos Dorados – Recipe for the Future.** Arcos Dorados is pursuing a value chain approach that integrates all stakeholders involved in the production of specialized animal products, emphasizing quality and environmental sustainability throughout the entire process, from farm to table. This serves as a noteworthy example of how consumers can drive positive changes in animal production through a holistic perspective that encompasses best production practices, safety measures, animal health, transportation, storage, distribution, and education regarding sustainable consumption.

**4. Questions and Answers**

**Question: What is the role of public and private partnerships?**

Mr. Barcos highlighted the significance of public-private partnerships in addressing animal health concerns, which include over 250 cases. Many of these cases are accessible on the WAOH website in Spanish, English, and French, emphasizing the framework’s long-term sustainability. Notable examples were provided, such as Uruguay and Colombia, where funds were collected to invest in animal health and reproductive practices within the cattle sector. Colombia, specifically, used these funds to implement good practices aimed at reducing antibiotic resistance. Similarly, several South American countries have been actively involved in vaccine development.

Furthermore, Health for animals in Africa offers veterinary services and has established reference laboratories for diagnosis. Vaccine banks have been established in various regions around the world. As part of African projects, agreements are reached to gather and share information regarding diagnoses, production, health, and factors impacting animal health. Additionally, public, and private partnerships offer vaccination campaigns, with private actors also contributing other veterinary products.
Question: What is the status of access to veterinary services and digital tools for veterinary diagnoses and recommendations in the developing world?

Access to veterinary services in the developing world is supported by community volunteers. Digital tools are employed to report to authorities, but for the actual animal health aspect, confirmation is typically obtained from a qualified veterinarian. There is a significant opportunity to expedite diagnoses and recommendations using digital tools. Bolivia has faced similar challenges, with limited access to private services due to cost, highlighting the need to develop local capacities.

According to Health for animals, there has been an overall improvement in global access to veterinary services. Emphasis is placed on the importance of public-private collaboration to enhance response capabilities for producers regarding diagnoses and recommendations. Nevertheless, the challenge of extending coverage in various regions persists.

Question: What is the regulatory framework for animal health?

Regulatory frameworks exist at both international and national levels. International regulations adhere to standardized principles for animal health. However, national systems can vary significantly from one country to another. Successful adoption and implementation of regulations require prior discussions involving all relevant stakeholders. Regulations should involve key participants throughout the supply production chain. Market dynamics play a vital role in setting conditions and making benefits visible to participants. Additionally, the geographical coverage of regulations across multiple countries is a crucial issue deserving attention.

Question: Regarding the relationship between diseases and GHG emissions, what are the current research trends and limitations?

While Mr. Rinkus’ presentation mentioned the link between diseases and greenhouse gas (GHG) emissions, there is limited research in this area. Existing studies have focused on the social and economic aspects of diseases, with less attention to their environmental impact. One environmental concern is water contamination resulting from deceased animals. Budget constraints in many countries have hindered further research into this issue.

The presentations and discussions on animal health and diseases underscore the critical role they play in ensuring the sustainability of agri-food systems.

Question: Is Arcos Dorados sourcing meat from NAMA (Nationally Appropriate Mitigation Action) farms with low GHG emissions in Costa Rica, particularly those free from deforestation?
During the panel discussion, it was clarified that Arcos Dorados is collaborating with all stakeholders in the supply chain to promote ‘NAMA Ganadería’ in Costa Rica with MRV (Monitoring, Reporting, and Verification). This means that, in the short term, some NAMA farms may become connected with this differentiated market, including those that have low GHG emissions and are free from deforestation.

5. Closing Remarks

Emerging diseases in recent years have triggered significant societal responses. The case of the Covid-19 pandemic underscored the importance of public awareness and engagement. In 2021, ILRI – UN produced a document addressing zoonotic diseases, which prompted stakeholders to emphasize the significance of the One Health approach. Although this approach is not new, numerous institutions, including CATIE, have actively contributed to this theme, incorporating various strategies and drivers.

Several key drivers related to diseases have been identified, including:

- The growing human demand for animal-based food sources.
- Unsustainable intensification of agriculture.
- Increased exploitation of wildlife.
- Unsustainable use of natural resources.
- Changes in food supply.
- Climate change exacerbating disease dynamics.
- The impact of diseases on social and economic factors.

Collective actions among stakeholders have been focused on various aspects of the value chain, including:
- Development of vaccines.
- Advancement of new diagnostic technologies.
- Exploration of alternatives to antibiotics.
- Implementation of biosecurity measures.
- Conducting more studies on the socioeconomic impact of diseases.
- Facilitating data and information sharing, as well as educational materials.
- Enhancing the use of digital tools.
- Improving the delivery of veterinary services.

Next steps in this endeavor include:
- Rejuvenating the professional workforce to effectively implement the One Health approach.
- Prioritizing the health of animals.
- Promoting sustainable animal production with a keen focus on animal welfare.
- Ensuring access to veterinary services.
- Emphasizing private sector participation. Mr. Villalobos highlighted the crucial role of Arcos Dorados in this regard during the presentation, explaining their commitment to sourcing
meat, milk, and eggs from providers who adhere to sustainable practices, including no deforestation and ensuring animal welfare, among other factors.

6. Attachments

You can access the attachments by accessing the following online folder: Attachment Folder – Webinar 2