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# Harnessing AI for Safe Trade in Latin America and the Caribbean: Innovations for SPS Transformation

## Introduction

Artificial intelligence (AI) is increasingly becoming a strategic tool for strengthening sanitary and phytosanitary (SPS) systems worldwide. In Latin America and the Caribbean, SPS authorities face expanding transboundary pests and diseases, climate-related risks, changing consumer expectations and complex regulatory requirements that affect agri-food trade. Authorities are required to process larger volumes of information and make timely risk-based decisions with limited resources.

Against this backdrop, AI and related digital technologies offer tools to modernize SPS services and improve their effectiveness. These technologies are also reshaping agricultural and food systems globally, creating new opportunities to strengthen SPS services. AI functions as a decision-support tool that strengthens the ability of regulators to manage risk, prioritize interventions and allocate resources more efficiently by helping them make use of large volumes of data. Within SPS systems, the greatest value of AI lies in augmenting human expertise and supporting professional judgement, rather than substituting it.

This briefing examines how AI and related digital technologies are being applied to strengthen SPS systems in Latin America and the Caribbean. It draws on experiences shared at a regional event, *Harnessing AI for Safe Trade in Latin America and the Caribbean: Innovations for SPS Transformation*, which was co-organized by the Inter-American Institute for Cooperation on Agriculture (IICA) and the Standards and Trade Development Facility (STDF) in San José, Costa Rica from 24 to 26 November 2025.

The event brought together government representatives from 21 countries, as well as private-sector organizations and international and regional organizations to exchange experiences, showcase innovative solutions and identify pathways for scaling successful AI approaches in SPS systems



## Emerging AI Applications Across National SPS Systems

Country experiences across the Americas demonstrate that, while countries are adopting AI-related technologies at different speeds and according to different priorities, some common trends are emerging and AI-enabled solutions are moving beyond isolated pilot projects towards more integrated, data-driven and predictive SPS systems.

**Data integration.** Several countries are using AI tools to help consolidate information from previously disconnected databases and information systems into interoperable single windows, reflecting the growing importance of integrated data environments for more effective, risk-based regulatory decision-making. ***Argentina*** is integrating animal traceability, slaughter declarations, electronic certification and laboratory systems into a single risk-based monitoring framework.

**Surveillance.** AI applications are being used to strengthen surveillance within SPS systems, for instance to analyse images showing spread of pests and diseases, monitor traps, process sensor data and support field inspections. ***Chile*** has developed digital phytosanitary surveillance systems that have reduced reporting times and improved access to real-time information for inspectors and decision-makers, targeting interventions more effectively and optimizing the use of resources.

Similar approaches are being adopted across the region. In ***Ecuador***, machine-learning tools and drone imagery are being used to support surveillance of priority pests and diseases affecting banana production, allowing inspectors to identify anomalies across large production areas and prioritize field inspections. ***Belize*** is taking a broader digital transformation approach that combines satellite imagery, smart surveillance systems, remote diagnostics and risk-based SPS controls to strengthen monitoring and improve communication between field personnel and technical experts.

**Predictive analytics** and **early-warning systems**. Some countries are advancing the use of AI to enhance SPS predictive analytics and early warning systems. ***Uruguay*** has tested the use of AI to identify risks. ***St. Kitts and Nevis*** is using AI-assisted diagnostics, drone monitoring and remote expert support to help address capacity constraints faced by small island developing states. These experiences demonstrate the potential of AI to support a shift to preventive and anticipatory SPS management.

**Digital certification.** Regulatory processes are being modernized and digitalized in the region, with the support of AI. ***Canada*** is using digital tools to support SPS certification and regulatory processes while maintaining regulatory integrity and public trust. This includes initial work to explore how AI can be used to inform different regulatory functions, with applications under development to support weed-seed identification, fertilizer label review and pest risk analysis.

## Regional Cooperation and Shared Digital Infrastructure

Regional cooperation is emerging as an important dimension of AI-enabled SPS transformation. Because many SPS threats are transboundary, cross-border collaboration and information-sharing are becoming increasingly important.

### The Andean Community's Regional Center for Phytosanitary Intelligence

One of the most advanced examples of regional cooperation is the Andean Community's Regional Center for Phytosanitary Intelligence (CRIFCAN), developed with support from the STDF (STDF/PG/838). Bringing together Bolivia, Colombia, Ecuador and Peru, the initiative seeks to strengthen preparedness against regional phytosanitary threats through integrated surveillance and AI-supported analysis. The platform incorporates web-scraping tools, satellite imagery, drone monitoring, mobile applications and interconnected national information systems. AI is used to analyse large volumes of data and generate alerts, reports and risk assessments. Beyond technology, the initiative also emphasizes the importance of harmonizing surveillance protocols, reporting formats and governance structures across countries.

### OIRSA Immersive Technologies for Capacity Development

Immersive technologies are also creating new opportunities for SPS capacity development. The International Regional Organization for Agricultural Health (OIRSA) has developed training approaches using virtual and augmented reality technologies to strengthen the skills of inspectors and technical personnel in areas such as Fusarium Tropical Race 4, citrus greening disease, fruit fly surveillance and veterinary inspection procedures. By allowing users to practice procedures repeatedly in realistic environments, immersive technologies can strengthen preparedness and help standardize technical competencies across countries, while reducing training costs.

### Regional Digital Certification Initiatives

Electronic certification systems represent another important area of digital transformation in SPS systems. Examples include the continued development and use of ePhyto and efforts to advance electronic veterinary certification, such as the ongoing STDF-funded project (STDF/PG/856) “Enhancing multilateral e-veterinary certification in Latin America and the Caribbean”. These initiatives aim to improve interoperability, streamline documentation procedures and reduce transaction costs associated with trade. More broadly, digital certification illustrates how technology can simultaneously support SPS objectives and facilitate trade. Looking ahead, the integration of AI capabilities could further strengthen verification processes, risk analysis and regulatory decision support.



## Private Sector Initiatives

Private-sector innovation is also demonstrating the potential for AI-enabled approaches to strengthen surveillance, diagnostics and agricultural decision-making. For instance:

***MetaBix Biotech*** has proposed a bio-surveillance platform that combines environmental sampling, biotechnology and AI to predict disease risks affecting animal production systems. Through its CAPTUS platform, environmental information and molecular diagnostics are combined with data analytics to support the early detection of sanitary threats.

***Neltume's*** monitoring platform combines climate sensors, image capture, automated traps and AI-assisted analysis to support pest surveillance and crop protection. The system continuously captures environmental and biological information and uses AI-supported processing to generate timely recommendations based on pest populations, climatic conditions and crop development. Validation studies demonstrated strong agreement between automated and conventional monitoring approaches, illustrating the potential of these technologies to improve surveillance while reducing demands on human resources.

***Agtools USA*** applies data-driven approaches to improve agricultural decision-making and supply-chain intelligence. This experience illustrates how advanced analytics can support market transparency, strengthen value chains and contribute indirectly to SPS objectives through better information management and risk awareness.



## Financing and Scaling AI Solutions for Improved SPS Systems

Many of the technologies needed to modernize SPS systems already exist. The challenge increasingly lies in moving successful initiatives beyond the pilot stage, scaling their application and ensuring their long-term sustainability. Access to adequate and sustained financing is therefore a critical factor in enabling AI-supported SPS transformation.

Development finance institutions can play an important role in creating the enabling conditions needed to scale digital innovation. ***BCIE's*** experience supporting climate-smart agricultural systems that integrate sensors, cloud-based monitoring and automated management technologies highlights the potential role of blended finance, public-private partnerships and capacity development as key elements for scaling digital transformation. ***FONPLATA's*** institutional experience with AI points to the importance of combining investments in technology with investments in governance, talent and organizational change.

Scaling AI-enabled SPS solutions will require access to a diverse range of financing sources. Public investment remains essential, particularly for digital infrastructure and core regulatory systems, but can be complemented by resources from development partners, multilateral institutions, regional organizations, research and innovation funds, academic institutions and the private sector.

Universities and research institutions can contribute technical expertise, research funding and innovation networks, while private-sector actors can provide technology, operational experience and financial resources. Public-private partnerships therefore offer opportunities to accelerate adoption, provided that appropriate governance arrangements are in place to safeguard transparency and accountability.

Ultimately, moving from pilot projects to large-scale implementation requires sustained financing, strategic planning and integration into existing institutional systems. Investment in AI and related digital technologies should therefore be viewed not simply as investment in technology, but as part of a broader investment in safer trade, stronger SPS systems and improved market access, with potential benefits for regulatory authorities, producers, consumers and trading partners.

## Enabling Conditions for Sustainable AI Adoption

As AI applications in SPS systems continue to develop, attention is increasingly turning to how these solutions can be adopted, adapted and scaled in ways that are practical, sustainable and responsive to national needs. Several enabling conditions will be important to turn this potential into lasting benefits for SPS systems and safe trade.

1. **Build on countries' level of digital readiness.**
   Levels of digital readiness vary considerably across Latin America and the Caribbean. While some countries have made significant progress, others continue to face constraints related to infrastructure, institutional capacity and access to specialized expertise. In practice, approaches need to be adapted to countries' different levels of digital maturity rather than relying on a single model of implementation.

2. **Plan for long-term sustainability.**
   Sustaining innovation requires not only effective technical solutions, but also institutional ownership, stable financing and the ability to demonstrate measurable benefits for SPS services and trade. This means considering how solutions will be financed, managed and maintained beyond the initial development or pilot stage.

3. **Build trust through transparency and human oversight.**
   As AI becomes more deeply integrated into regulatory processes, maintaining confidence in SPS decisions requires transparency, scientific credibility and appropriate human oversight. AI should support, rather than replace, professional judgement and accountable decision-making.

4. **Focus AI applications on practical SPS needs.**
   AI should be viewed not as an objective in itself, but as a tool for addressing practical SPS challenges. Priority should be given to applications that strengthen risk management, improve service delivery and facilitate safe trade, generating tangible benefits for SPS authorities, producers, consumers and trading partners.

## Recommendations

Accelerating the responsible adoption and scaling of AI-enabled solutions that supports the implementation of international standards and facilitates safe trade requires coordinated action across the region. The following recommendations highlight priority areas for action, from strengthening regional cooperation and capacity development to improving digital and regulatory readiness, mobilizing sustainable financing and expanding knowledge exchange.

1. **Strengthen regional networks and communities of practice.**
   Establish and/or strengthen a regional network of SPS and AI focal points to facilitate peer learning, technical cooperation and regular exchanges on emerging technologies, implementation experiences and common challenges and opportunities. Such a network would play an important role in encouraging a regional repository of existing AI-enabled SPS initiatives, in accelerating the transfer of knowledge on and fostering collaborative solutions.

2. **Invest in people alongside technology.**
   Expand training and capacity-building programmes on AI applications, data management, digital skills and innovation leadership. Strengthening human capabilities remains essential to ensuring that technological investments translate into sustainable improvements in SPS services.

3. **Strengthen data ecosystems and digital readiness.**
   Improve data quality, interoperability, cybersecurity and information-sharing arrangements while supporting assessments of countries' digital maturity and readiness. Robust data systems are a prerequisite for effective and trustworthy AI applications.

4. **Promote regulatory readiness and responsible AI governance.**
   Encourage the development of practical guidance and policy frameworks that address transparency, accountability, cybersecurity and ethical considerations related to the use of AI in SPS systems. Regulatory modernization should evolve alongside technological adoption to maintain confidence in SPS systems.

5. **Mobilize sustainable financing for roll out and scaling up.**
   Leverage national resources, development finance, research funds and private-sector partnerships to support the long-term implementation and maintenance of AI-enabled SPS solutions. Particular attention should be given to moving successful pilots into operational programmes with the ability to scale.

6. **Strengthen collaboration with academia and innovation ecosystems.**
   Foster partnerships between SPS authorities, universities, research centres and technology developers to accelerate innovation, validate new solutions and support workforce development. These partnerships can also help connect SPS agencies with broader research and funding opportunities.

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7. **Expand regional intelligence and early-warning initiatives.**
   Build on existing platforms and networks to pilot the use of AI to improve surveillance information sharing and coordinated responses to transboundary pests, diseases and food safety threats. Greater regional connectivity can enhance preparedness and support more proactive risk management.

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8. **Maintain political commitment to SPS digital transformation.**
   Position AI-enabled modernization as a strategic investment in safer trade, stronger SPS systems and agricultural competitiveness. Sustained political leadership will be essential to mobilize resources, support institutional reforms and ensure the long-term sustainability of digital transformation efforts.



About STDF:

The STDF is a global partnership to facilitate safe trade. It was established by the Food and Agriculture Organization (FAO) of the United Nations, the World Bank Group, the World Health Organization (WHO), the World Organisation for Animal Health (WOAH) and the World Trade Organization (WTO).

The STDF strengthens the sanitary and phytosanitary capacity of public and private sector stakeholders in developing countries, driving safe and inclusive trade that contributes to sustainable economic growth, poverty reduction, food security and climate resilience, in support of the UN Global Goals.

About IICA:

The Inter-American Institute for Cooperation on Agriculture (IICA) is the specialized agency for agriculture of the Inter-American System that supports the efforts of its Member States to achieve agricultural development and rural well-being. by strengthening the agrifood systems of the Americas and recognizing that agriculture is the driving force for economic, social, and environmental progress in the region. IICA provides cooperation through close and permanent work with its 34 Member States, responding to their needs in a timely manner.

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