



## IICA-COLEAD Caribbean Agrifood Business Series

### Session n°17: Innovation and technology adoption by entrepreneurs in the Caribbean

Thursday 24 April 2025

#### HIGHLIGHTS

#### About IICA-COLEAD Caribbean Agrifood Business Series

In June 2021, the Inter-American Institute for Cooperation on Agriculture (IICA) and COLEAD launched the **Caribbean Agrifood Business Series** to showcase the innovations and successes of Caribbean farmer-led businesses and small and medium enterprises (SMEs). This series is part of the IICA-COLEAD collaboration aimed at developing a more sustainable and resilient agriculture sector in the Caribbean region. **The series highlights the contributions of entrepreneurs, farmers, agripreneurs, and SMEs to business models that are economically, environmentally, and socially viable.** Participants share their best practices, innovations, and technologies to help others embrace the opportunities offered by local, regional, and export markets. These regular sessions foster the exchange of best practices, networking opportunities, and business scaling strategies.

The latest Caribbean Agrifood Business session n°17 explored **innovation and technology adoption by entrepreneurs in the Caribbean**. The discussion also showcased **support mechanisms from development partners**. The session drew **492 registered participants across continents**, eager to learn more and access additional resources. On the day of the event, **177 participants from around the world** actively contributed, sharing insights and experiences.

Programme: [Link](#)

Biodata: [Link](#)

Recording of the session: [Link](#)

#### About innovation and technology

Innovation and technology adoption hold immense potential for transforming the agrifood sector in the Caribbean. By leveraging smart agriculture, digital marketplaces, and value-added processing, entrepreneurs can enhance productivity, increase market access, and build more resilient agribusinesses. However, challenges such as high investment costs, inadequate infrastructure, and regulatory hurdles must be addressed through targeted policy interventions and stakeholder collaboration. With the right strategies in place, the Caribbean can unlock the full potential of its agrifood sector, fostering economic growth and food security in the region.

#### Key points discussed

- The agrifood sector plays a crucial role in employment, food security, and rural development across the Caribbean. However, challenges such as **climate change, limited access to financing, and market volatility** continue to affect entrepreneurs—challenges that innovation and technology can help overcome.

- Innovations span agritech, clean energy, data systems, and localized engineering solutions, often integrating sustainability, affordability, and resilience.
- **Precision and smart agriculture technologies include drones for organic spraying, satellite tracking of fishing vessels** for real-time monitoring and improved fisheries compliance, **smart scales**: automatically record catch data and print traceable tags for supply chain transparency and **digital pest detection** for real-time alerts.
- Modern farming techniques like **precision agriculture, hydroponics, and aquaponics** can boost plant health and **water efficiency and enhance climate resilience**.
- **Data systems and traceability platforms** allow data aggregation and digital records and traceability which improves transparency, compliance, and market access.
- **Appropriate and localized engineering** allows processing of local value chains using affordable, space-saving machinery tailored for local conditions—e.g., infrared solar roasters, cocoa pruners, cassava grinders.
- **Circular and regenerative practices** reduce waste by turning herbs and fruits into shelf-stable products and restore land health.
- **Climate-responsive infrastructure and energy** such as weather-adaptive cooling systems are tailored for tropical climates.
- The growing global demand for **sustainable and traceable food products** presents an opportunity for Caribbean agribusinesses to stand out through **green innovation**.
- **Value-added processing** (freeze-drying, eco-packaging) open new markets and reduce food waste; **solar-powered roasters and chillers improve** small-scale processing and storage.
- **Renewable energy** (solar, biogas) lower operational costs and support sustainability.
- However, **several barriers** must be addressed: **high upfront costs, limited financing, insufficient technical capacity, poor infrastructure, and restrictive regulations**.
- Unlocking the sector's potential requires expanding access to tools like the Internet of Things (IoT) and fintech (mobile banking, crowdfunding), while **investing in agritech incubators and training**.
- **Strong policy support, infrastructure development, and targeted capacity-building** are essential to scale innovation.
- **Multi-stakeholder collaboration**—between public institutions, private actors, and development partners—will be key to transforming the Caribbean agrifood sector sustainably and inclusively.

## Meet the businesses and entrepreneurs

### Jill Donk – Manager, [ZUDO Tropical Fruit](#), Suriname

Jill Donk was born and raised in Suriname in a true agricultural family. Later, she married a farmer, which only deepened her connection to the world of agriculture. Together with her parents, she has always been involved in farming—starting primarily with vegetable cultivation, and around 12 to 14 years ago, they began growing soursop. In addition to farming, she worked in education for 12 years. However, over time, her passion for agriculture grew stronger, eventually leading her to leave teaching and fully commit herself to the family business, which they named ZUDO. The company specialises in the cultivation and processing of soursop into products like juice, pulp, and tea. Within ZUDO, Jill is responsible for data management and financial administration. With great passion and dedication, she and her family are building a future for sustainable farming in Suriname. With support from the Suriname Agriculture Market Access Project (SAMAP) and a grant of nearly \$297,000, Jill expanded the company's production capacity, acquired over 200 new pieces of equipment, and established a network of 10 outgrowers.

Jill highlighted the different technologies used to transform their farming practices and eliminate the use of chemical insecticides. To naturally protect their soursop crops, they introduced *drone technology*, using

drones to spray organic seaweed solutions that repel harmful insects while efficiently fertilizing trees, reaching even the undersides of leaves. This method not only enhanced tree health and nutrient absorption but also reduced fertilizer use and operational costs. In addition, Jill described the use of *solar insect killers*, eco-friendly devices that attract pests with purple-blue lights and trap them in soapy water, effectively controlling insect populations without chemicals. Together, these technologies enabled ZUDO Tropical Fruits to produce 100% insecticide-free soursop, improving environmental sustainability, restoring natural biodiversity on the farm, and offering consumers a safer, healthier product.

**Tim Hauber – Farm Development Officer, [Centre for Training and Innovation](#), The Bahamas**

Tim Hauber grew up in Ontario, Canada and obtained a BSc. In Food Science from the University of Guelph. After working in the field of Sensory Science in Canada for 5 years Tim moved to Nassau, The Bahamas to manage The Adventure Learning Centre, an outdoor educational center for Bahamian school children. Tim spent almost 20 years in Nassau operating several farms including Goodfellow Farms, Lucayan Tropical Produce and Field to Fork Community Farm. These farms span the spectrum from low tech organic vegetable production techniques to high tech hydroponic vegetable production in state-of-the-art greenhouses. Tim is currently employed at The Center for Training and Innovation (CTI) in Rock Sound, Eleuthera as the Farm Development Officer. His focus at CTI is to improve access to fresh vegetables throughout Eleuthera and to provide educational experiences for local farmers and backyard gardeners.

Tim highlighted a major technological innovation, their *retractable roof cooling house*, designed specifically for tropical conditions where traditional greenhouses fail. This adaptive structure uses weather data to control light, temperature, and protection from storms, significantly extending the growing season and reducing crop losses. Additionally, CTI has achieved energy independence with solar panels, collects over a million gallons of rainwater annually for irrigation, and uses hydroponic systems enhanced with nano-oxygenation to boost plant health. Alongside high-tech solutions, Tim emphasizes the importance of regenerative agricultural practices to rebuild healthy soils, combining advanced technology with natural methods for sustainable food production.

**Mahalia Joseph – Managing Director, [3BA Allamanda Enterprise Limited](#), Trinidad and Tobago**

Mahalia Joseph is a forward-thinking entrepreneur from Trinidad and Tobago, dedicated to driving sustainability through innovation in agri-processing and renewable energy. She is the founder of 3BA Allamanda Enterprise Limited (3BAEL), a company established in 2021 that produces high-quality dried herbs, spices, and fruit snacks under the brand Allamanda Flavours, while also pioneering clean energy solutions for underserved communities. With a strong foundation in agriculture and food systems, Mahalia leads 3BAEL's integrated approach to farming and full-cycle processing—reducing waste and maximizing product value. Her passion for sustainable innovation extends into the energy sector with ECOBATT, a groundbreaking sand battery that provides affordable, reliable energy storage using thermoelectric technology. Her work has been recognized regionally and internationally, winning the 2024 NEDCO Innovative Entrepreneur Award, COSTAATT's Full Circle Competition, and placing in the WIPO Pitch Competition. She also completed the NEDCO Business Accelerator Program and represented ECOBATT in the global ClimateLaunchpad competition. Driven by purpose and powered by innovation, Mahalia continues to shape a greener, more resilient future for Trinidad and Tobago and beyond.

Mahalia introduced *ECOBATT*, a clean energy storage solution designed for agricultural resilience, community empowerment, and environmental regeneration. Responding to the urgent energy challenges faced by small farmers — including high costs, unreliable access, and climate vulnerabilities — Ecobatt offers a sustainable alternative. Made from local sand and steel, Ecobatt stores solar and wind energy as heat, later converting it into electricity. Unlike lithium batteries, it is affordable, recyclable, low-maintenance, non-toxic, and easily repairable, making it ideal for rural and underserved areas. Targeted applications include microgrids, greenhouses, cold storage, and irrigation systems. Mahalia emphasizes Ecobatt's affordability, safety, and alignment with global climate goals, aiming to empower local manufacturing, create green jobs, and reduce carbon emissions. Ecobatt will be launched in Trinidad and Tobago by 2026, with ambitions to expand throughout the Caribbean, Latin America, and Africa, while inviting partnerships to support pilot projects and scalable deployment of this groundbreaking solution.

**Richéda Speede – Managing Director, [Blue Shell Productions](#), Barbados**

Richéda Speede is an ocean professional with over six years of experience in coastal and marine resource management. Richéda holds a BSc (Hons) in Ecology and a MSc (Dist) in Natural Resource and Environmental Management, both attained at the University of the West Indies, Cave Hill Campus. With a passion for participatory research she has consulted on projects focused on fisheries management, sargassum management, social impact assessment, and blue economy development. Richéda is currently the Managing Director of Blue Shell Productions, a boutique consulting firm that provides specialized services in fisheries management and blue economy development. There, she discovered her professional niche in the fisheries sector, consulting on projects that promote resilience, drive digital innovation, and support sustainable fishing practices to advance the industry.

Richeda introduced *DigiFish*, an innovative initiative designed to tackle data scarcity and improve fisheries management in small island developing states like Barbados. Recognising the critical gaps in monitoring and traceability, DigiFish deploys digital technologies to modernize the sector. Key innovations include outfitting fishing vessels with lightweight, solar-powered satellite tracking devices to monitor fleet activity in near real-time, and installing Smart Scales at landing sites to automatically record catch data. These tools feed data into a centralized cloud-based intelligence platform that enables interactive tracking, analysis of fishing behavior, and supports better regulatory compliance and marine spatial planning. The Smart Scale also prints traceable tags for each fish, improving supply chain transparency and opening premium markets for sustainable seafood. Overall, DigiFish strengthens fisheries management, enhances fisher safety, and builds a robust evidence base to support both environmental sustainability and economic opportunities for Barbados' fishing community

**Meet our partner organisations supporting entrepreneurs**

**Dr. Ruel Ellis – Lecturer, [University of the West Indies](#)**

Dr. Ruel Ellis is a lecturer in the Department of Mechanical and Manufacturing Engineering at The University of the West Indies (UWI), St. Augustine in the following courses: Simulation, Project Management. Production/Operations Management, Database Design and Enterprise Information Systems. He is the Coordinator of the MSc. Project Management Programme and also delivers the Project Management Information Systems and Project Management for Small and Medium Enterprises courses. Additionally, he supervises projects in the MSc. Occupational Environmental Safety & Health in the Faculty of Science and Technology. Dr. Ellis is also the current Chairman of the IEEEETT (Institute of Electronic and Electronic Engineers, Trinidad and Tobago) Education Society and is current Chairman of the Society of Caribbean Industrial Engineers and President of the West Indian Group of University Teachers (St. Augustine Branch). Publicly Ruel serves as Chair of the Operations Committee on the NIHERST Board of Governors, he is a member of the National Productivity Counsel and the Advisory Committee for Creative industries at the NTA.

Dr. Ruel Ellis highlighted the development of *appropriate technology*—simple, economical, and locally tailored innovations—designed by the Department of Mechanical and Manufacturing Engineering at the University of the West Indies to support agricultural value chains in cocoa and cassava. For cocoa, innovations span the entire "bean to bar" process, including a 270-degree rotating cocoa pruner, a cocoa splitter, a space-saving fermenter, an infrared solar-powered roaster, a pre-grinder, and solar chillers—all aimed at enabling local production of high-quality chocolate rather than exporting raw beans. For cassava, Ellis outlined machinery for harvesting, washing, peeling, drying, and grinding, facilitating the local production of cassava flour as a wheat alternative to help reduce regional food imports. Context-specific engineering can enhance food security, reduce waste, and strengthen local agri-processing. These innovations not only boost productivity but also empower farmers and entrepreneurs across the Caribbean.

**Fayaz Shah – Manager of Science, Technology and Innovation, [Caribbean Agricultural Research and Development Institute \(CARDI\)](#)**

Fayaz Shah is an agronomist by training with over 25 years of experience working in the Agricultural sector in the Region. He is currently the Manager for Science, Technology and Innovation at CARDI. In this position he provides strategic leadership to a multidisciplinary team of scientists and technical staff to implement the Institute's research programme across 14 CARICOM member states. His focus has been on increasing crop productivity, reducing crop risk and supporting climate adaptation. This has led to him introducing and validating new agronomic techniques resulting in increasing cassava yield to 27,000 lbs. per acre to support



development of further agro processing flour and starch industries and for improving management of the South American Palm weevil in coconuts using an improved pheromone funnel trapping method. Before joining CARDI Fayaz held various technical managerial positions in the private and government sectors where he worked specifically on improving the productivity of hot pepper, cassava, sweet potato cocoa and crops produced in hydroponic systems. He has also conducted farmer's capacity building exercises for farmers and farmers' groups on pest and disease management and increasing yield for various crops in Dominica, Grenada, Guyana, Jamaica, St Lucia and Trinidad and Tobago. As technical consultant/project manager Fayaz has also worked in Trinidad on the Caroni Green Hot Pepper Project where he was able to achieve an increase in hot pepper yields to 20,000 lbs per acre to support their fresh fruit export. In this position, he also worked with several farms in the Caribbean including Plympton Farms in Guyana to mitigate their pest and disease challenges and increase their crop productivity. He is the holder of a Master of Science in Crop Protection with specialization in entomology from the University of the West Indies.

Fayaz shared a range of innovative technologies that are driving agricultural progress in the Caribbean. He highlighted the *hydroponic systems* designed for small-scale production, demonstrating how digitally controlled irrigation can optimize resources and help produce high-yield crops like peppers and cauliflower in limited spaces, such as school gardens. He also emphasized *germplasm conservation*, showcasing CARDI's work in developing drought-resistant crop varieties like the Muruga red hot pepper and sweet potatoes that thrive in changing climates. Fayaz introduced *low-cost pest management techniques*, including an innovative funnel trap system to combat the South American palm weevil without the use of chemicals, as well as *digital pest detection systems* that alert farmers about infestations in real-time. Additionally, CARDI has introduced a *solar-powered bird repeller* for cocoa farms, successfully reducing damage from parrots. With these efforts, Fayaz underscored how CARDI's technologies are not only enhancing productivity but also ensuring sustainability in the Caribbean agriculture sector.

## Resources

### 1. Reports, articles and studies

Asian Journal of Agriculture and Development. 2023. Agricultural Transformation for Small (Island and Developing) States. <https://ageconsearch.umn.edu/record/337002/?v=pdf>

CARDI. Strategic plan 2024- 2028: Using Science and Innovation to Improve Caribbean Agri Food Systems. <https://www.cardi.org/welcome-to-cardi/medium-term-plan/>

Compete Caribbean. Innovation & Firm Performance In the Caribbean. September 4, 2023. <https://www.competecaribbean.org/documents/innovation-firm-performance-in-the-caribbean/>

CTA. The Digitalisation of African Agriculture Report 2018–2019. <https://cgspace.cgiar.org/items/fb60e627-208f-4ae1-abal-40bc2054e856>

FAO. 2017. The Future of Food and Agriculture Trends and Challenges. <https://openknowledge.fao.org/server/api/core/bitstreams/2e90c833-8e84-46f2-a675-ea2d7afa4e24/content>

IDB. Unlocking Innovation: Assessing the Role of Agricultural R&D in Latin America and the Caribbean. 2023. <https://publications.iadb.org/en/unlocking-innovation-assessing-role-agricultural-rd-latin-america-and-caribbean>

University of the West Indies. West Indian Journal of Engineering. 2025. <https://journals.sta.uwi.edu/ojs/index.php/wije/issue/view/879/21>

World Bank Group. What's cooking: digital transformation of the agrifood system. 2021. <https://documents1.worldbank.org/curated/en/417641615957226621/pdf/Whats-Cooking-Digital-Transformation-of-the-Agrifood-System.pdf>

### 2. Webinars

FAO. Agrovisiones: Webinar series on innovation for agrifood transformation. <https://www.fao.org/americas/events/agrovisiones/>

IICA-COLEAD. Webinar: Innovations of Caribbean entrepreneurs in climate resilient technologies.  
[https://www.youtube.com/watch?v=RONCB\\_9ii-E&list=PLV5hWpGiR943QSpvZil5IECB4Gnf3W\\_7Z&index=44](https://www.youtube.com/watch?v=RONCB_9ii-E&list=PLV5hWpGiR943QSpvZil5IECB4Gnf3W_7Z&index=44)

Pan American Health Organization. Webinar: Leveraging the transformative power of digital technology towards achievement of the SDG 3 targets for and with young people in Latin America and the Caribbean.  
<https://www.paho.org/en/events/webinar-leveraging-transformative-power-digital-technology-towards-achievement-sdg-3-targets>

### 3. Trainings

COLEAD e-learning platform : <https://training.colead.link/>

IICA training: <https://seed.iica.int/>

#### Coordination team for these series:

[IICA](#): Allister Glean – Representative in Barbados, Shontelle Sealy – Technical Assistant, Roxanne Waithe – Technical Specialist

[COLEAD](#): Isolina Boto – Head of Networks and Alliances, Nina Desanlis-Perrin – Project Officer, Ahoefa Soklou – Project Officer



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