17 NOVEMBER 2026

Session n°23:

Smart food production and digitization: How Caribbean agrifood entrepreneurs can use data and technology





Caribbean Agrifood Business Series ...

UWI
ST. AUGUSTINE CAMPUS
TRINIDAD & TOBAGO, WEST INDIES

IICA–COLEAD CARIBBEAN AGRIFOOD BUSINESS SERIES · SESSION 23

Engineering Smart Agrifood for the Caribbean

How Industrial and Mechanical Engineering at UWI can serve agri-entrepreneurs, policy makers and manufacturers

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Panel 2 · 17 November 2026

THE REAL QUESTION

Not *whether* to digitize, but which investments deliver returns in a small-island operating environment.

That is an engineering question: right-sized equipment, energy-efficient design, data a lender trusts, and local capacity to build and maintain it.

Framing drawn from the IICA–COLEAD Session 23 concept note

Two halves of one system

Mechanical & Biosystems Engineering

The physical system

Machines and mechanisation, energy, water and irrigation, controlled environments, post-harvest handling, food engineering and food plant machinery.

Industrial Engineering

The enterprise system

Productivity, quality and traceability, information systems and data, cost and engineering economics, planning, layout and scale-up.

Programmes and the courses behind them

Seminar theme	What we teach
Water and precision irrigation	Soil & Water Engineering ·Drainage & Irrigation ·Hydrology
Sensors and automation	Industrial Instrumentation ·Control Systems ·Automation
Mechanisation	Field Machinery ·Traction & Power Hydraulics ·Machine Design
Post-harvest and energy	Post-harvest Technology ·Food Engineering ·Renewable Energy
Data and digitization	Industrial Databases ·Enterprise Information Systems · Statistics
Quality and the business case	Quality & Reliability ·Engineering Economics ·Simulation

BSc Industrial Eng. ·Mechanical Eng. ·Mechanical Eng. with Biosystems **MSc** Engineering Asset Mgmt ·Engineering Mgmt ·Manufacturing Eng. & Mgmt **MPhil/PhD**

Source: DMME course listings 2025–2026

PROOF IT WORKS · REGIONALLY RELEVANT COCOA EQUIPMENT PROJECT

Industry equipment, designed and built with local expertise

13

prototypes and models for harvesting, fermenting, processing and finishing cocoa

~20

further machines developed by mechanical, industrial and agricultural engineering students

4

modules in the follow-on low-cost bean-to-bar equipment project, with the Cocoa Research Centre

EDF-funded through the T&T Ministry of Education · Sources: UWI Today, Sept 2019; DMME MMERC

A wider base of applied work

Agro-processing machines

Cassava peeler, coconut grater, fruit pulp extractor, cocoa pod splitter, cocoa butter press

Controlled environments and cold chain

Efficient greenhouse design, controlled-atmosphere greenhouse, cryogenic food freezer

Drying, post-harvest and energy

Solar crop drying and post-harvest research; renewable energy, refrigeration and waste-to-energy

Operations and systems

Warehouse optimisation for a major food processor; quality, information systems and technology adoption

Sources: DMME exhibitions 2016–2019; staff research profiles

Each adoption barrier has an engineering response

Barrier named by IICA	Engineering response
Cost and energy	Right-sizing, energy audits, solar-assisted and efficient design
After-sales and vendor lock-in	Local design, fabrication and maintenance capability
Weak data	Low-cost sensing, record systems and data standards
Informality and finance	Lender-ready records and bankable feasibility studies
Skills	Training, student projects and graduates in the sector

Barriers from the Session 23 concept note · Caribbean electricity averages about US$0.25/kWh, over US$0.40 in some countries

SERVICES · 1 OF 3

For agri-entrepreneurs and agro-processors

Technology-fit check

Payback, energy load and upkeep at your real scale, before you buy

Right-sized equipment

Machines designed for regional crops and volumes, built by local fabricators

Energy and climate design

Energy audits, solar drying, greenhouses built for heat and hurricanes

Water and sensing

Precision irrigation layout, pump sizing, low-cost moisture and climate sensors

Process and quality

Packhouse layout, productivity, cold chain, traceability for buyers and export

Bankable records

Cost, yield and sales systems plus feasibility studies that lenders trust

SERVICES · 2 OF 3

For policy makers and development agencies

Technology appraisal

Independent testing of imported smart-ag systems; input to equipment standards

E-Agriculture Strategy support

Engineering input to the precision-ag, skills and governance pillars

Value-chain modelling

Simulation of aggregation, cold-chain and logistics to target public investment

Agricultural data design

Data-collection systems and standards to close the statistics gap

Programme design and M&E

Tie technology grants and incentives to measured productivity outcomes

Shared-service models

Processing hubs, equipment pools and regional repair and fabrication centres

Aligned with Vision 25 by 2025+5 and the CARICOM E-Agriculture Strategy (endorsed October 2025)

SERVICES · 3 OF 3

For manufacturers and fabricators

Product co-development

Agri-equipment product lines through CAD/CAM, analysis and testing

Technology transfer

Licensing of manufacturing-ready designs; support for spin-outs

Manufacturing systems

Planning, layout, quality and cost engineering for small-batch production

Asset management

Maintenance and reliability programmes that make after-sales support credible

Plant optimisation

Capacity, layout, energy and quality gains for food and beverage plants

Workforce pipeline

Graduates, internships and MSc pathways for your technical staff

How to work with us: the MMERC

Class A

2–3 months ·no cost

Short, well-defined problems, usually May–August

Class B

6–9 months ·no cost

Design-and-build or improvement studies, from September

Class C

Special ·agreed fees

Feasibility studies, pilots and custom engagements

Class D

1 year+ ·agreed costs

In-depth R&D and grant-funded partnerships

A strong proposal has a clear scope, a named project champion, and access to data and facilities.

Also open: final-year capstone projects, MSc and PhD research, and training for practitioners.

A PROPOSAL TO IICA AND COLEAD

A regional Appropriate Agri-Technology & Engineering Clinic

Match
IICA and COLEAD networks bring agripreneurs with defined problems

Engineer
DMME teams assess, design and prototype through MMERC

Scale
Local fabricators build; results are shared across the region

Smart agriculture in the Caribbean will not be imported whole. It will be engineered here: sized for our farms, powered for our energy costs, and maintained by our people.

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Thank you

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