CUCAER: Driving the Enhancement of Human Resource Capital, Research, and Innovation for Sustainable Agricultural Development and Food Security in CARICOM Amid a Changing Climate

Theme: Climate Smart Agriculture for a Sustainable Future

Background

Small Island Developing States (SIDS) in the Caribbean are highly vulnerable to climatic variability associated with climate change, severely impacting food security. These changes adversely affect agricultural activities, particularly farming, leading to decreased agricultural productivity and a food security crisis. A staggering 67.5% of the Caribbean population experiences moderate to severe food insecurity, impacting their health and well-being (Mohammadi et al., 2022). In comparison, the rates are 57.9% in Africa and 24.6% in Asia (GASCO, 2022). Notable figures in some Caribbean countries include Haiti at 82.5%, Jamaica at 50.3%, and Trinidad and Tobago at 43.3% (FAO 2022).

Several factors contribute to this crisis. Record-breaking temperatures in May and August 2023 have exacerbated water scarcity, impacting water quality, access, and availability, affecting agriculture (Ewing-Chow 2024). Countries such as Antigua and Barbuda, Barbados, Dominica, St. Kitts and Nevis, St. Vincent and the Grenadines, and Trinidad and Tobago face extreme water stress (Seven Seas Water Group 2023), with supplies dropping below 1,700 m^3 per person (Mycoo and Roopnarine 2024). Since 70% of total water usage goes toward agriculture, this is particularly concerning, especially in countries like St. Lucia, St. Vincent, and Trinidad and Tobago, where crops almost entirely depend on rainfall for irrigation (Ewing-Chow 2024).

Climate change has also increased the frequency and intensity of extreme weather events such as storms, droughts, flooding, and hurricanes, disproportionately harming agriculture, which absorbs 63% of the impact. Between 2008 and 2018, the agricultural sector in Latin America and the Caribbean experienced significant losses estimated at approximately USD 29 billion due to natural disasters (FAO 2021). Additionally, the region suffers from limited arable land, and the diversity of soils and topography makes it difficult to ensure the quality and quantity of produce. The aforementioned is exacerbated by soil degradation from unsustainable farming practices, with countries like Jamaica losing 9,722 hectares of farmland yearly (Ewing-Chow 2019).

Coastal zones in the Caribbean are highly vulnerable to sea-level rise, recorded at 6.15 ± 0.5 mm/year from 2004-2019, which is 67% faster than the global mean sea level rise (Fox-Kemper, Hewitt, and Xiao 2023). This leads to saltwater intrusion, affecting freshwater aquifers and agricultural productivity (USDA n.d.; Fraser 2018). Furthermore, the growth in agricultural productivity has been slow, unable to satisfy the rapidly increasing demand for high-quality agrifood products due to the high cost of production, high trade costs, and low capacity to comply with modern quality and food safety standards. The region imports approximately 80% of its food, amounting to an annual food import bill of USD 5 billion (CARICOM 2023). Disruptions in international food supply chains, such as the Russia-Ukraine war, increase food costs to USD 3.89 per person per day compared to the world average of USD 3.54 for a healthy diet (PAHO

2023). The sector's dependency on imported agricultural inputs like fertilisers, feed, and fuel exposes it to volatile prices, further straining the agricultural sector and broader economy (FAO and CDB 2019).

In addition to the impacts of climate change on food security, issues such as food waste, inadequate financial services, a reduction in agriculture in rural areas, and policy challenges further exacerbate food insecurity in the region. For instance, food waste in Latin America and the Caribbean averages 223 kg per person per year, significantly contributing to global greenhouse gas emissions from food waste, which collectively stand at 6% (Ewing-Chow 2019; Ritchie 2023). Fruits and vegetables are significant contributors to this waste, highlighting the need for targeted efforts towards value addition and reuse through composting.

Inadequate financial services and limited investment appeal in the Caribbean restrict farmers from acquiring capital to modernize production, leading to lower technology adoption. For example, the Agriculture Development Fund (ADF) approved only six loans in 2013 and one in 2014 (Shik, Boyce, and De Salvo, 2019). A reduction in agricultural activity and inadequate non-formal agricultural education for youths impact the livelihoods of rural communities and exacerbate food insecurity.

Lastly, policy issues in the Caribbean involve a debate between trade liberalization and protectionism. While some countries, such as Trinidad and Tobago and Jamaica, have eliminated non-tariff barriers, others, such as Barbados, maintain them, affecting domestic producers. Despite recognizing the need to enhance food access and promote healthy food systems, policy interventions remain inadequate. These challenges underscore the urgent need for a collaborative approach to improving food security in the Caribbean region in the face of a changing climate.

Rationale

Addressing the complex challenges of the Caribbean Community (CARICOM)'s agricultural landscape requires a collaborative approach. Strengthening food security and achieving the ambitious goal of a 25% reduction in food imports by 2025 necessitates this strategy. A regional technical workshop, involving stakeholders from government, academia, industry, and civil society, is crucial for facilitating the exchange of knowledge, expertise, and best practices.

A key player in this collaborative initiative is the Consortium of Universities in CARICOM Involved in Agricultural Education and Research (CUCAER), which includes The University of the West Indies (UWI), the University of Trinidad and Tobago (UTT), Anton de Kom University of Suriname (AdeKUS), the University of Guyana (UG), and the University of the Bahamas (UB). These institutions are dedicated to advancing excellence in agricultural education and research.

The findings from this initiative will guide CUCAER's efforts to enhance human capital development, research, and innovation. Post-COVID-19, the Caribbean's unemployment rate surged to 12.2% (Alleyne et al. 2022). Addressing this through continuous faculty training, expanding non-traditional course offerings such as Continuing Professional Education (CPE), and empowering women and youth can boost participation, diversity, and inclusivity in agriculture. Improving curricula to meet regional and industry-specific needs will further aid in human capital development.

CUCAER will focus on identifying key research objectives, reducing fragmented efforts, and consolidating human and financial resources to maximize impact. This initiative aims to promote transparency, prevent duplication, and ensure efficient and effective outcomes. By bridging the skills gap and equipping current and future agricultural practitioners with essential knowledge and expertise, CUCAER will create an environment conducive to innovation. This collaborative effort will contribute to sustainable agricultural development and enhance food and nutrition security across CARICOM countries amidst a changing climate.

Objectives

- Engage stakeholders, including government, academia, industry, and civil society, to discuss and address critical agricultural issues.
- Facilitate human capital development for regional agricultural needs
- Enhance curricula to meet national and regional developmental needs
- Inform research agendas and reduce fragmentation in research efforts
- Promote innovation

Target audience and beneficiaries

- Agricultural technical officers
- Business chambers/private sector organisations
- CABA/Agribusiness Associations

- Chief Technical officers/Directors of Agriculture/Directors of Planning
- Associations
- NGOs involved in food and agriculture (Cropper Foundation, AACARI), ECTAD, CANROP
- Directors of Fisheries
- Supermarket associations, Other Agri entrepreneurs, input dealers, processors, importers
- Regional institutions, CCS, OECS, CDB, CDF, CARDI, CRFM
- Directors of School Feeding
- NAMDEVCO/ agricultural marketing bodies
- Embassies/International Agencies (Global Affairs Canada, Columbia, Brazil, Cuba, USAID, USDA)
- CPSO, CAPA
- Regional Agricultural/Developmental agencies (CARDI, IICA, FAO, UNEP)
- Women's organisations Helen's Daughters

Draft Agenda:

Opening Remarks and Workshop Overview

- Introduction to the workshop's focus on human capital development, research, and innovation in agriculture
- Overview of objectives and expected outcomes, emphasizing the importance of aligning human capital with research and innovation efforts

Presentation on the Current State of Agriculture in the Caribbean

- Overview of the agricultural landscape: key statistics and trends
- Identifying key issues, skill gaps, research gaps, and opportunities for innovation in agriculture

Presentations on Current Education, Training, and Research Initiatives

- Presentations by representatives from The University of the West Indies (UWI), University of Trinidad and Tobago (UTT), Anton de Kom University of Suriname (AdeKUS), University of Guyana (UG), and University of the Bahamas (UB)
- Discussion on ongoing educational programs and research initiatives and their impact on human capital and innovation in food security

Group Discussions on Human Capital Development Challenges

- Participants divided into groups based on their organization type or position in the agricultural value chain
- Each group discusses and answers the following questions:
    1. What is your role in the agriculture sector?
    2. Can you share your organization's mission and goals?
    3. What are the main challenges your organization currently faces regarding skills, training, and research in agriculture?
    4. How has climate change impacted the skills required in your organization and the innovation process?
    5. How do you currently contribute to fostering research, capability building, and professional development in your community?
    6. What skills or knowledge gaps are most critical for agricultural professionals in the region, particularly regarding innovation?
    7. Are there specific education or training initiatives that could benefit the region's agricultural workforce in promoting innovation?
    8. How can universities support the enhancement of professional development and innovation in the agriculture sector?

9. How can universities and training institutions foster collaboration and partnerships to enhance workforce development and research initiatives?

Group Presentations

- Each group presents their findings and insights from the discussions
- Open floor for questions and additional input from participants

Developing an Action Plan for Human Capital Development and Innovation

- Outline actionable steps to enhance human capital development and promote innovation within the agricultural sector
- Define roles, responsibilities, and timelines for implementation
- Identify necessary resources and potential funding sources for educational and research initiatives

Closing Remarks and Workshop Evaluation

- Summary of workshop outcomes and the significance of bridging human capital development with research and innovation
- Feedback from participants on the workshop and suggestions for future initiatives
- Closing remarks and next steps

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