Fish waste: an agro-economic opportunity

Remembering Dr Keith Archibald (OBE)

Evaluating improved cassava germplasm in Dominica

Celebrating the “power of pulses”
In Barbados, CARDI and the Food and Agriculture Organisation of the United Nations (FAO) collaborated to pilot an initiative for increased production of livestock products, through the utilisation of locally produced fish silage in ruminant feeds. This project sought to utilize fish by-products (skins, heads and guts) which, according to preliminary data, amount to over 11,000 lbs per day. Most of this “waste” is buried in the landfill.

Under the project, fish silage was prepared by combining 20% acetic acid with grounded fish by-products. The low pH environment created by the acid accelerates the action of enzymes in the fish, causing proteins to be hydrolyzed. The protein in fish silage is more digestible than in the raw material. The acid also prevents spoilage caused by the proliferation of bacteria. More than a month after preparation, the pH reading stabilised at 3.8. Fish silage can also be dried and incorporated in local feed formulations, either in-ground or pelletised forms. To facilitate the drying, a solar dryer was constructed to reduce energy costs. The dryer is equipped with 2 solar collectors for heating and a 300-watt extractor fan. The unit is powered by a 720-watt photovoltaic system and reaches temperatures exceeding 90°C.

Lab analyses found that dried samples contained 56.4% crude protein. Crude protein is one of the most expensive ingredients in livestock feeds. This work has the potential to make ruminant feeding more affordable for farmers while saving on foreign exchange used to import traditional protein sources, such as soybean meal.

It also helps to address the issue of fish waste disposal and can be an economic opportunity for entrepreneurs.

Later this year, animal feeding trials will be conducted using formulations that include fish silage products to provide data on animal performance. The aim of the programme is to develop alternative feeding systems that can deliver superior nutrition to ruminant livestock at lower costs, resulting in more competitive production systems and enhanced availability of meat for consumers.

Dr Archibald joined the CARDI family in January 2000 as the Chairman, Board of Directors, a position he held until 2005. During his tenure, he working tirelessly to highlight the importance of CARDI and sought to improve staff conditions. On his visits to CARDI offices, staff recalls an always jovial, humble and deeply caring person.

Dr Archibald was always generous with his advice and never passed on an opportunity to tell a joke.

Even after leaving CARDI, he continued to champion the Institute and regional agriculture development. His book “My life in Agriculture” is regarded as an essential read for all Caribbean agriculture development students.

During his principal years, Dr Archibald was a lecturer at the Department of Livestock Science at the University of the West Indies, St Augustine Campus, from 1967 – 1985. On leaving the University he served as the Director of Agriculture, St Kitts and Nevis.

Dr Archibald served in many positions during his career and to all of them he carried his jovial spirit and enriched the lives of those he encountered. He has indeed left a lasting legacy. It was a privilege to have him serve as CARDI Chairman – his dedication and unwavering optimism will always be remembered.

On behalf of the CARDI family, we wish to express heartfelt condolences to his children, grandchildren, extended family and friends. May he Rest in Peace.
Soon cassava farmers in Dominica will have four new varieties added to their production cycles, thanks to the CARDI implemented component of the project, “Cassava Industry Development- Market Assessment and Technology Validation and Dissemination Project,” funded by the Caribbean Development Bank (CDB) and executed by the Food and Agriculture Organisation of the United Nations (FAO). Three newly improved cassava accessions (CM 3064-4, CM 3306-4, CM 6119-5) and one landrace (COL -1522) introduced from the Centre for Tropical Agriculture (CIAT) are being evaluated for adaptation to Dominican conditions.

The accessions which were received as in-vitro plantlets were weaned and hardened following the Latin American and Caribbean Consortium for the Support of Cassava Research and Development (CLAYUCAS) protocol. In January 2020, a germplasm plot was established at the Agricultural Station in Portsmouth for observation and agronomic characterization. From this plot, F2 planting material will be obtained for subsequent agro-ecological evaluations.

Cultivation was done on ridges and a drip irrigation system installed. Before establishing, a soil test revealed that it was slightly acidic with acceptable levels of potassium and low levels of nitrogen and phosphorus. However, the fertilization of the plot was hampered by the lockdown restrictions imposed by COVID -19. An integrated crop management approach was used to manage and monitor the plants.

Generally, plants grew well but were affected by recurring infestations of the cassava hornworm, cassava shoot fly, mites and thrips.

The CM 3064-4 accession has so far been the least susceptible to mites and thrips. This variety also grew more vigorously and produced the largest tubers.

CARDI will collaborate with the Ministry of Blue and Green Economy, Agriculture and National Food Security (MoBGEANFS) to conduct evaluations of the F2 planting material of these accessions across different agro-ecological zones in Dominica.

February 13th was World Pulse Day; a day designated by the United Nations to highlight the importance of these grains to our diets, livelihoods, sustainable production systems and food and nutrition security.

CARDI Belize has led research and development activities for pulses, one of the Institute’s priority commodities. Annually, evaluations are conducted on several varieties of red beans, black beans and soybean among others. This work is critical in maintaining the viability and integrity of these varieties and the interest of small farmers. CARDI developed, technological packs, continue to be used as a resource guide by small farmers involved in the commercial production of red kidney beans and black eye peas.

The foundation laid by the Institute has placed Belize on a path to becoming self-sufficient in grain production and a major exporter to CARICOM.

In accordance with the International Seed Testing Association (ISTA), the CARDI Seed lab conducts the required purity and moisture tests for pulses exported from Belize. The CARDI stamp of approval assures exporters of the quality of the product.

CARDI Belize also serves as the repository for seeds for several varieties of pulses and grains. From the 16 varieties of red and black beans in storage, seeds are mass-produced and sold to farmers.

Pulses produced in Belize have assisted in kick-starting agricultural production after major disasters across the Region, such as Dominica after hurricane Maria and Haiti after the devastating 2012 earthquake.

Presently, the unit is diversifying its work with pulses to address the challenges of climate change and malnutrition. CARDI is a part of a network of local, regional and international agencies evaluating biofortified beans, rich in iron, for commercial production in Belize. Fifty one lines of black and red beans are being evaluated across three agro-ecological zones in Belize.
Antigua and Barbuda
CARDI is working with IICA and Ministry of Agriculture on a crowd funding project to bring relief to farmers impacted by the #COVID19 pandemic.

Grenada
To improve fruit set in soursop, CARDI is conducting hand pollination trials.

Dominica
A fixed vent roof protected agriculture production system was installed to increase the capacity for production and storage of climate resilient cultivars under the Pilot Program for Climate Resilience (PPCR).