

Strengthening Agriculture Education and Research

1.0 Purpose

The matter for tabling is Strengthening Agriculture Education and Research in the Agriculture Sector

2.0 Background

The Ministry of Agriculture and Fisheries (MOAF) in its effort to drive sustainable development in the agricultural sector has realized that the systems of agricultural research, education and extension were inadequate to provide required technologies for increasing food production given dwindling government funding and attrition of research scientists with the relevant competencies. Hence, the Ministry started making strides towards the strengthening and re-organization of the agricultural research division through the fostering of collaborative linkages with academic research institutions, international research organizations and private public sector partnerships.

In the context of a globalized economy faced with emerging issues such as climate change and a pluralism of information, new challenges in agriculture have been created which necessitates the enhanced need for timely and accurate information as one of the drivers of agricultural growth. This will warrant creative ways of generating, processing and sharing of agricultural knowledge communicated by various stakeholders in the education and research continuum to support the sustainable development of the agricultural sector. It is anticipated that through the fostering of collaborative linkages with educational institutions, international research organizations and public private sector partnerships that levels of innovation, technology generation and sharing will be increased so as to improve the efficiency of the agricultural knowledge system.

Human resource development and capacity building and sharing of limited resources are essential for enriching knowledge and empowering farmers, researchers, students, extension officers and trainers in agricultural and allied sectors. It is anticipated that through these efforts, the technology information needs of the farmers will be met.

3.0 Research and Development Division's collaboration with other entities

3.1 *Initiatives with academic institutions*

- A Memorandum of Understanding (MOU) with the University of the West Indies
 - Through this Agreement, the University of the West Indies is collaborating with the MoA&F through its R&D Division to introduce new processing technology to Jamaica in the form of a cassava processing plant from CLAYUCA, Colombia.

This technology will be added to the cassava value chain expansion currently underway.

- A Memorandum of understanding (MOU) with the University of Guelph, Canada
 - Through this Agreement, the Ministry of Agriculture & Fisheries R&DD – Apiculture Unit has re-engaged parties at the University of Guelph to assist in capacity building under a project to establish the National Characterization of Jamaica's Honeybee. IICA Jamaica has also been approached for assistance on this project and has put together a budget under this Apiculture Technical Cooperation Initiative. The projected cost of this jointly funded project among IICA Canada, IICA Jamaica and MoA&F-R&DD is \$6,198.00 USD (\$670,000JMD).
 - The project will facilitate capacity building in the use of molecular tools and morphometrics in the determination of specific honeybee characteristics from the various bee populations in Jamaica. This will aid in the determination of traits for the presence of Africanized characteristics in order to fulfil international requirements for the trading of queen bees and semen. Specific characteristics responsible for the production of honey, pollen and other hive products will be targeted. The information garnered will be used to develop a National Breeding Programme in accordance with international requirements. Outputs will be used locally and to facilitate the export of queen bees to countries that are required to do re-queening every one or two years.
 - A Memorandum of Understanding (MOU) with Florida A&M University, USA to facilitate higher education and training at graduate and post graduate level as well as collaborative research, now awaits signing off from both parties.

3.2 Initiatives with international and regional research agencies

- A Memorandum of Understanding (MOU) was established with World Food Global USA and the Caribbean
 - To build capacity in plant breeding with initial focus on corn and soybean. World Food Global has other partners in other countries such as Africa thus providing linkages with other plant breeding research institutions
- MOAF- R & D Division is collaborating with FAO/CARDI on a regional project piloting modernized cassava production systems through the creation of technology packages for delivery to farmers. This initiative will be combined with other activities under the Jamaica-Columbia South-South Cooperation.
- Bioenergy Corporation, USA is currently establishing field evaluations of King Grass at the Montpelier Research Station to assess its potential as a source of bioenergy. This is

being done in collaboration with a Scientist from Cornell University and funded by the Bioenergy Corporation to the tune of US \$1 Million.

3.3 *Bilateral South- South Cooperation*

- Through a Bilateral Technical Corporation with Colombia we successfully completed:
 - A project on alternative animal feeds for ruminants (Dairy cattle) 2013/14
 - Three new Technical Cooperation Projects (TCPs) for the 2014-2016 period are being developed to deal with:
 1. Improving livestock (ruminant) performance through the development of silvopastoral systems in Jamaica. This project aims to determine the feasibility of silvopastoral systems in mitigating impact of climate change and improving productivity and cost efficiency in livestock production. This TCP is between the Research and Development Division (R & DD), and the Rural Agricultural Development Authority (RADA) in collaboration with CORPOICA Colombian Research Agency.
 2. Strengthening the supply side of the cassava value chain. This aim of this TCP is capacity building in assessing strategies to reduce the cost of cassava production and to sustainably supply tubers at a very competitive price for processors to utilize.
 3. Introduction of Improved Irish Potato varieties to Jamaica.
This project aims to:
 - a) Contribute to self-reliance in seed source of a high standard and broadening of bio-diversity of Irish potato varieties through introduction of improved types suitable for fresh consumption and processing
 - b) Improve sustainability and development of potato industry in Jamaica through the strengthening and deepening of alliances among farmers/farmer organizations, research and extension.
 - c) Enhance reduction and/or containment in cost of crop production and improved competitiveness , which provides opportunities for export and earning of foreign exchange
 - d) Increased productivity and bio-diversity of varieties - Production of crop outside of traditional season (which currently depends on availability of seeds from suppliers in temperate climate countries.

4.0 Public/ Private Sector partnership

- Ginger Resuscitation Programme
 - Work started 2012-2013 continues with the Export Division to produce and supply clean ginger planting material of local varieties

- The second year (2013/14) saw continued effort to refine nursery production system for production of ginger planting material and standardize nutrition programme with resultant average yields in excess of 1 kg per plant, maximum yield 2kgs per plant. Average multiplication ratio of 1: 22 attained, maximum attained 1:32. Ideally 1:80 desired. Evaluations will continue to maximize yields and compare performance with irradiated material for improved traits.
- Investment in infrastructure in Year 1 was approximately \$7.5 million which included the establishment of one shade house at the Montpelier Research Station and two shade houses at the Orange River Research Station
- Budgetary allocation for year three (2014/15) is approximately \$2.2 million
- Petroleum Corporation of Jamaica (PCJ) /R&D/CARDI Biodiesel project
 - The aim of the project is to determine the feasibility of Jatropha and Castor varieties as feed stock for biodiesel for utilization in farming operations
 - The duration of the project is five years (2010-2015) with a budgetary allocation of \$4.5 million
 - The project is in its fifth year with a finishing budgetary allocation of \$1.75 million
 - The cost of production studies are underway and the extraction of oils is to be evaluated in this year (2014-2015)
- Grace Kennedy Peanut Initiative
 - The aim of this project is to evaluate two new varieties of peanut for their value added potential for the Jamaican export market
 - The budgetary allocation for this project is \$570,000.00
- Dairy Board Hay Commercialization Project

The objective of this project is to:

 - Increase land usage for hay production by 24 hectares at Bodles and Hounslow Research Stations
 - Decrease total concentrate usage by 50%
 - Improve nutrition of existing dairy herd and increase milk production by 5% annually
 - Provide low cost high quality hay to dairy farmers in St. Catherine and St. Elizabeth
 - Budgetary allocation is \$25 million
 - The projected earnings is approximately \$6 million per year from the second year

5.0 Agricultural Education Integration

The Ministry of Agriculture and Fisheries (MoAF) with the support of the Food and Agriculture Organization (FAO) launched a consultancy to conduct an analysis of Agriculture Education in

Jamaica. The objective of the consultancy was to assess the status of the secondary and post-secondary agriculture education and training programme and related institutions in Jamaica and draft recommendations for future agricultural education and training for the various target groups and draft the respective curricula.

The main reason for launching this consultancy was to support the national agriculture development strategy which can only be implemented if the labour force engaged in the sector is adequately qualified. Presently farmers need to be trained in best practices to increase productivity and production, and the future agriculture labour force needs to be trained in modern agriculture technologies at all levels in the formal training system. The challenge was and still is to improve the training of skilled workers for this sector with its vast growth and employment potential. The study focused on the provision of job market-oriented modules of technical vocational education and training and further education of specialists.

The Ministry of Agriculture & Fisheries is concerned that the Agricultural Education infrastructure in the country has not been adequately responding to the needs of the sector especially given the continued modernization of the sector that now requires agricultural workers with far greater levels of skills and competencies than that which is being delivered currently or is available.

The main vocational technical institutions, Sydney Pagan (formerly Elim Agriculture School) and Knockalva Agriculture School - designed to train students at this level have fallen short and may even now be in need of significant funding. At the same time the University/degree level involving UWI St. Augustine and College of Agriculture, Science and Education (**CASE**) are not producing the quantity and range of specialists required to drive the new agriculture framework.

It was in recognition of these realities and the central role that agriculture must play in the economy, that the Ministries of Agriculture and Education have been having dialogue on the restructuring/rationalization of agricultural education.

It was within this context that support for an analysis of the agricultural education system was requested from the Food and Agriculture Organization (FAO) of the United Nations. This assessment examined Jamaica's agricultural education on two levels, secondary and technical vocational education and training, and tertiary level agricultural education.

5.1 Collaborative Strategic Intervention

To this end both Ministries have reviewed a TOR to be used to guide the establishment of a National Steering Committee with adequate representation from both Ministries and relevant stakeholders. Through this committee the ministries intend to garner stakeholders and other interest groups support for the planning, policies and legislative framework to guide new governance structures towards the revolutionization of the current approach. The Committee will be responsible for the strategic implementation of an integrated approach to:

1. Coordinate the resources of the Technical Vocational education and training system as a strategic priority to streamline agriculture education in all secondary schools and specified colleges and universities
2. Design and implement curriculum and training programmes to produce a skilled, competent and purposefully qualified pool of professionals, ready for service delivery and the creation of broad and unique employment creation opportunities within this sector
3. Commission a manpower projection and gap analysis for the agriculture and related sectors, inclusive of tracer studies. This data is critical for planning agricultural programming at all levels and across all the institutions.
4. To integrate agriculture research stations such as Bodles Research Station into the system of agricultural education so as to provide a strong link between research and training. This will be an advantage to both since research stations are well qualified to disseminate cost effective technology to teachers and students geared towards general improvement of agricultural production.

Already the MOAF – R&D Division has initiated several joint research projects through MOU collaboration with UWI. The Export Division collaborated with CASE to conduct ginger trials to support the production and supply of disease free and known fertilizer coefficient of production of ginger on specific soils.

The Dairy Board is currently reviewing a plan to provide support to the increased supply of fresh milk to the School Feeding Programme and training in dairy production. This will be done through the distribution of dairy heifers to the agriculture vocational education programmes at the College of Agriculture, Science and Education, Sydney Pagan Agriculture High School, Knockalva Agricultural School and Ebony Park HEART Academy at a cost of \$20 million. Training in these institutions will be supported by international specialists for a period of at least two years.

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