

MINISTRY PAPER NO.: _____

PERFORMANCE OF THE SCIENTIFIC RESEARCH COUNCIL FOR THE 2005/2006 FINANCIAL YEAR AND FOCUS FOR THE 2006/2007 FINANCIAL YEAR

1.0 Purpose of Ministry Paper

The main purpose of this Ministry Paper is to inform Parliament and the general public on the performance of the Scientific Research Council (SRC) during the 2005/2006 Financial Year and the main focus for the 2006/2007 Financial Year.

2.0 Mission

The Mission of the SRC is to serve the productive sector, policy makers and the general public in order to enable sustainable development in Jamaica by:

- providing quality scientific and technological solutions (product/process research and development, policy advice, technology transfer);
- popularising science and technology through strategic alliances; and
- being customer-focused, with innovative, competent and responsive teams.

3.0 Role and Functions of the SRC

The SRC was established by an Act of Parliament in 1960, with subsequent modifications to operating procedures.

Overall, the Agency seeks to contribute to economic growth by broadening the industrial base in a manner that focuses on the use of local resources. The SRC also provides technical support to existing industries to enhance their performance in increasingly competitive domestic and international markets. To that end, the Council is involved in:

- (a) development of new and improved marketable Jamaican value-added products;
- (b) commercialisation and subsequent sale of products and technologies based on local raw materials, with the objective of reducing risks to entrepreneurs.
- (c) provision of Science & Technology (S&T) information;
- (d) provision of technical support, training, and transfer of technology to the agro-industrial sector;
- (e) provision of technical support, training and advice for the management and optimisation of waste in several sectors, including tourism;
- (f) increasing public awareness of the relevance of science and technology to national development;

- (g) introduction of advanced agricultural technologies to enhance productivity in selected sectors;
- (h) economic management of important local resources in a sustainable manner; through partnership with local communities
- (i) facilitating and encouraging the development of a national innovation system; and
- (j) policy, planning, implementation and management through national projects and committees of Government agencies.

4.0 Priority Policy Issues

Based on the National Industrial Policy (Cluster 3) and the National Science and Technology Policy, the SRC is mandated to support the agro-industrial sector in ensuring food security, strengthening export potential and improving quality of life.

5.0 Highlights of Performance for 2005/2006

The following outlines the achievements of the SRC in meeting the priorities of the Ministry for the Financial Year 2005/2006.

5.1 Increased Client Productivity and Product Quality

- (a) The work programme in this area for Financial Year 2005/2006 was implemented under a memorandum of understanding (MOU) between SRC and BSJ. Five staff members completed the train-the-trainers 5-day workshop on HACCP II and Internal Auditing training under the IDB-funded Quality Jamaica Project. Documentation and Gap Audit reports were completed and submitted to BSJ for four companies.
- (b) Three trainee consultants continued to prepare their assigned companies for HACCP certification. Their interaction with the companies focussed on establishing the HACCP prerequisite programme. A GMP training programme was also developed and certified by NCTVET.
- (c) Completed heat distribution studies at two factories in order to develop venting schedules for retorts.
- (d) Retort inspection schedules were prepared and submitted to the BSJ. Twenty-two factories were inspected during the review period.
- (e) Assisted clients in the production of Sorrel Squash, minimally processed food and jerk seasoning, in follow-up to the clients' purchase of technologies for these products
- (f) Completed scheduled process activities for food products for three clients;
- (g) Provided and advice to over 10 clients in natural product development; and to over 100 clients in various aspects of food processing

- (h) Analysed over 1850 samples of food, water and wastewater for external and internal clients.
- (i) Signed a cooperation agreement with the Jamaica Manufacturing Association (JMA)
- (j) Work programmes/action plans relating to the Memoranda of Understanding (MOU's) with International Atomic Energy Agency (IAEA), University of Technology (UTech), Rural Agricultural Development Agency (RADA) and University of the West Indies (UWI) were implemented as follows:
 - 1. Signed agreement with UTech for collaboration on a Capsule project and undertook product development work subsequently.
 - 2. Received equipment and accessories, glassware and reference book under the IAEA agreement.
 - 3. Two UWI MBA students were assisted with preparation of materials for individual projects
 - 4. Continued product development work with UWI pharmacology student
 - 5. Completed assessment of the UWI wastewater system
 - 6. Field visits made to recently established cultivation plots of ginger and sorrel in Manchester (Coleyville), Trelawny (Lorrimers), Portland (Bourbon) and Bodles in St. Catherine. Other field visits were made to St Mary, St. James, Hanover and Clarendon to monitor cultivation plots
 - 7. Conducted practical sessions with 27 UWI food science students; 25 UTech hospitality students and eight CASE students
- (k) Marketing/Public Education - Creative and innovative marketing approaches and a public education programme were implemented targeting the business sector
 - 1. Presented technologies amenable to MSME's at a meeting convened by the Minister of Development.
 - 2. Presented information on available technologies for the Eastern Region (Portland).
 - 3. Conducted market survey on prices of retail chicken products in the Corporate Area. Prepared demand analysis for Manish water to facilitate sale of soup developed by SRC. Conducted price survey of smoked meats, to guide pricing of SRC's products. Investigated the market for soy-based drinks and commenced research on the demand for intermediary products. Hotels and large manufacturers are targeted.
 - 4. Held discussions with over ten (10) clients regarding business development opportunities of SRC.

5. Met with senior representative of the EX-IM Bank to discuss collaboration between SRC and the Bank in support of projects.
 6. Continued marketing of the Petstats CD-ROM re funding micro and small industries.
 7. Updated database of funding agencies and of current and potential clients.
 8. Hosted a one-day Sorrel Festival at Devon House in November 2005
 9. Hosted four public consultations for the preparation of a Draft National Biotechnology Strategy.
 10. Co-ordinated Innovation Award 2005, at which eight individuals were awarded prizes for inventions and innovations. The overall winner in the area of Information and Communication Technology (ICT) has subsequently received extensive local and international exposure.
- (l) Feedback mechanisms were developed to measure and report on the impact of SRC services on clients.

5.2 New Products and Processes

- a) Under the OAS Nutraceutical Project, protocols were established for standardized actives from sorrel, lemongrass, ginger, turmeric and rosemary.
- b) Eleven project proposals were submitted to funding agencies or under bilateral cooperation agreements, for approval. The proposals for capacity building and consortia business development services were approved by the EU-funded Private Sector Development Programme, administered by JAMPRO.
- c) The research work on the Temporal Immersion System was halted as constraints including unavailability of equipment and expertise limited the work. These resources are now being sought.
- d) Four varieties of sweet potatoes were successfully placed in culture. Continued work on multiplication of sweet potato plantlets and rooting/acclimatization of coffee and ornamental plum. Monitored performance of these plants in sample plots located in St. Elizabeth and Manchester
- e) Maintained cultivars in various gene banks and continued research in development of an efficient conservation media for *Musa*
- f) Continued product development on
 - i. Convenience Meals
 - ii. Ginger-based food product
 - iii. Lemon grass-based drinks

- iv. Skin lotion and skin cleanser formulated from plant oil.
- v. Sweet potato-based products
- vi. Minimally processed foods
- i) Completed product development contracts for customers in the agricultural (including tissue culture) and agro-processing (nutraceuticals, food) sectors
- j) Technical assistance was provided to three clients who requested information on essential oils and sorrel seed oil extraction
- k) Continued literature survey on plants having antioxidant activity $\geq 80\%$, which have not indicated any toxic effects. Over 100 plants were screened. Continued to isolate pure actives from marine extracts of eight plant species on behalf of the UWI.
- l) Completed an article for the Journal of Agricultural and Food Chemistry, titled: Biological Activity and Chemical Composition of the Essential Oil from Jamaican *Hyptis verticillata* Jacq.
- m) Completed and submitted an article to Insect Science and Its Application titled: *Cantharidins (Spanish fly) and Related Derivatives as Chemosterilants for Cattle Ticks*.
- n) Delivered over 5300 sweet potato plantlets and over 3000 banana plantlets to clients

5.3 Utilization of Technologies

- a) Developed a training programme in tissue culture technology which was accredited by NCTVET; infrastructural limitations halted the staging of this training programme which was held in the 3rd quarter of the Financial Year. Received NCTVET certification for previously submitted training programmes in jam and jelly processing and canning
- b) Conducted training programmes in: canning (21 participants); juice (12 participants), jams/jellies (6 participants) and meat processing (9 participants). Completed training of two food processors from Barbados, one from Grenada and one from Guyana. The workshops were sponsored by the Caribbean Development Bank (CDB) and involved the development of specialty jam/jellies, addressing the need of the specific target market, as well as shelf life study and standardization of cakes. Also completed a fish processing workshop in Grand Turks on behalf of the CDB; eight persons participated.
- c) Increased promotion and utilization of the anaerobic waste treatment technology in the residential, hospitality and agro-processing industries. Acquired permit and license for the construction of wastewater treatment systems; completed construction of thirteen wastewater treatment systems ranging from 10 m³ systems to 200 m³ systems. This included systems at three boys' homes/places of safety for the Child Development Agency (CDA);

- completed an operation and maintenance manual for a client and the construction of evapo-transpiration beds at some of the above facilities. Completed feasibility studies for 40 clients and partially completed six wastewater treatment systems.
- d) Completed the training of members from the McIntyre and Burga Gully communities in *in-vitro* plant propagation. Funds were provided by the SESP for training and ASSP/Ministry of Agriculture for infrastructural work and equipment for a tissue culture lab to be established in Port Royal as an income generating venture. Also provided technical assistance on the production of tissue cultured plantlets to thirteen clients.
 - e) Facilitated approximately 40 clients in using the food pilot plant for food processing.
 - f) Presented a project proposal on solar drying technology to the internal technical review committee. The proposal is being upgraded. A proposal on biofuels was developed and submitted to the Ministry for funding. A visit was made by a consultant to review the proposal.
 - g) Prepared a draft proposal outlining different options for commercialisation of SRC's Tissue Culture Project.
 - h) Launched new value-added food products developed by SRC, namely ackee spread, ackee cheese, ackee & salt fish (regular & spicy), manish water, minimally processed yellow yam, green banana and sweet potato.
 - i) Sold technologies including a Jamaican soup, minimally processed foods such as yam, banana and sweet potato as well as exotic jams & jellies.
 - j) Transferred technology in cane juice processing to a client
 - k) Completed and presented technical reports on the Artemia Research Programme and the AWL to the Board of the SRC and the Technical Review Committee. Consideration is being given to the feasibility and continuation of the Artemia programme

5.4 S&T Awareness and Popularisation:

- a) Information packages (including S&T Policy Bulletin and advisories) were prepared and disseminated to various ministries.
- b) Coordinated and facilitated three stakeholders' consultations to discuss the draft CCST Regional Policy on Science, Technology and Innovations. Meetings were facilitated in: Montego Bay (September 13); Mandeville (September 15) and Kingston (September 27).
- c) Information on technologies and S&T-related issues were presented to six (6) communities through liaison with agencies and NGO's that have contact with these targeted communities. A roving exhibition on S&T was launched in Devon and Cross Keys, Manchester, and Montego Bay. Planning continued regarding new parishes earmarked for launch of roving exhibitions and prize

- giving ceremonies for the Post Office S&T Quiz Competition were organized and held in Devon and Cross Keys, Manchester, St. Ann and St. Thomas
- d) Held two successful WIN/ISIS workshops at the Sir Arthur Lewis Institute of Social & Economic Studies, UWI, targeting professionals in the Science and Technical Information network (STIN). Thirty seven (37) persons participated.
 - e) Assisted with strengthening science teachers in their craft. The following were completed:
 - i. Participated in a panel discussion on innovative and creative ways to teach science
 - ii. Coordinated two Biotechnology Workshops in collaboration with the Biotechnology Centre, UWI, and the Ministry of Education, for teachers at the CAPE level. Over 25 teachers from 22 schools participated..
 - iii. A total of eleven teachers benefited from the summer attachment programme and worked for 3 - 4 weeks in the seven participating Companies: BSJ; CARDI; CFNI; RADA (sponsored by RBTT) Jamaica Broilers; SIRI and Conrad Douglas and Associates. These companies invested approximately two hundred and seventy thousand dollars in the programme during the review year.
 - iv. Held science fair Workshops for teachers in Mandeville and Kingston
 - f) Several activities/programmes aimed at popularising S&T in high schools were implemented.

5.5 Internal Capacity Building:

- a) Completed training of two staff members in extractions of plant species using the Supercritical Fluid Extractor.
- b) Participated in a seed testing seminar, put on by FAO/ISTA.
- c) Participated in a one week Regional Training Workshop of the Caribbean Agricultural Science and Technology Innovation (ASTI) system
- d) Attended the Healthy Foods Conference in Washington DC, USA, a seminar on “New Horizons in Performance Reproducibility with New Automatic Developing Chamber Digital Documentation System” at CAMAG (Supplier of HPTLC equipment) in North Carolina, USA and an International Conference on Quality and Safety Issues related to Botanicals at the University of Mississippi, USA, sponsored by the OAS as part of the Nutraceutical Project.
- e) Attended the UNESCO Regional Conference on Education for Sustainable Development held in October 2005. The Conference focused on the many problems experienced in the delivery of Science Education.
- f) Attended an Extrusion Technology course in Texas in February 2006.

5.6 Institutional Strengthening

- 5.6.1 Received equipment and accessories including a deioniser system, conductivity meter, AA standard solutions, AA lamps, glassware and the latest edition of reference book for water/wastewater analyses under the WRA/IAEA agreement. Received HPTLC equipment, VideoScan Software and additional books related to the herbal/nutraceutical industry.
- 5.6.2 Implemented activities re: upgrade of the Food Pilot Plant to meet HACCP requirements.
- 5.6.3 Maintenance of plant & equipment: implemented maintenance plan for equipment, fleet of vehicles, grounds and buildings. Repaired switchboard and received quotation for a replacement.
- 5.6.4 Accreditation of analytical laboratories: completed revision of the quality manual of the Analytical Services Department. The laboratory is awaiting establishment of the local accreditation body in order to apply for accreditation to the ISO 17025 standard.

6.0 Budgetary Allocation

The actual expenditure for Financial Year 2005/2006 and Approved Expenditure for Financial Year 2006/2007 are presented in Table 6.1 below.

Table 6.1: Actual Expenditure (2005/2006) and Approved Expenditure (2006/2007)

Categories of Expenditure	Actual Expenditure (2005/2006) (\$M)	Proposed Budget (2006/2007) (\$M)
Compensation of employees	104.0	107.8
Travel expenses and subsistence	11.8	10.5
Rental of property, machinery, equipment	0.422	0.6
Public utility services	10.9	10.6
Grants and Contributions	0.304	
Purchases of other goods and services	34.9	15.6
Equipment (capital goods)	4.8	
Total	162.1	145.1

7.0 Priority Projects/Programmes for Financial Year 2006/2007

1. Continued training of individuals as well as local and regional micro, small, and medium-sized (MSME) enterprises in various aspects of food technology and safety, wastewater management and biotechnology. Special emphasis will be placed on addressing the quality issues in the juice and roots beverages sub-sector:
 - a. Develop and conduct certified training programmes as components of the PSDP-approved Consortia Business Development Services project in: GMP, HACCP awareness, juice processing and strategic marketing; and
 - b. Conduct other certified training programmes including: tissue culture, meat processing, operation and maintenance of wastewater treatment systems, biogas technology, jams and jellies, and canning
2. Initiation of a regional HACCP consultancy service
3. Provision of consultancy services, technical assistance and advice to customers in product and process development, food processing technologies, waste management, biotechnology, and natural products
4. Provision of analytical services, technical assistance and consultancy/advice in chemistry and microbiology, to clients in the areas of water/wastewater and food technologies
5. Product development:
 - a. Completion of protocols for extraction, characterization and standardization of ginger, turmeric, lemongrass, sorrel and rosemary
 - b. Provision of service in issuing of certificates of analysis of select natural products
 - c. Completion of protocols for prototypes of one functional food, one cosmeceutical and one nutraceutical supplement
 - d. Implementation of promotional and marketing strategy for approved protocols and analytical services in natural products.
 - e. Developmental activities towards the standardization of active ingredients in other local plants towards development of a nutraceutical industry in Jamaica.
 - f. Completion of technology package for select products developed
 - g. Completion of formulation of at least two sweet potato-based products
 - h. Preparation of a short-list of potential food-based products
 - i. Review and update of documentation for existing formulations of the SRC
 - j. Development of conservation protocols for plants already established and for the initiation and multiplication of at least six select economically important plant species
 - k. Training of staff in conservation procedures for plants

6. Continued promotion and utilization of the environmentally friendly, energy generating, anaerobic waste treatment technology
7. Promotion and sale of technologies, services and S&T information packages of the SRC
8. Implementation of two proposals approved by the EU-funded Private Sector Development Programme, administered by JAMPRO. Expected outputs include a semi-automatic juice line available to MSME's for the production of Jamaican 'roots' and juice products and the training of at least 25 MSME's in good manufacturing practices, food safety systems (HACCP), juice processing and strategic marketing.
9. Implementation of projects under various bi-national agreements and memoranda of understanding with institutions such as BSJ, JMA, RADA, UWI and UTech:
 - a. Continued collaboration with Bureau of Standards Jamaica (BSJ) to determine client needs and assist clients with quality problems
10. Continual sensitization on the importance and value of S&T nationally, regionally and internationally
 - a. Community focused S&T popularization activities including the establishment of an outpost programme in rural communities.
 - b. Continued support of the primary and secondary schools' science curricula through the activities of the Schools Science and Technology Societies (SSTS), and the staging of science fairs/exhibitions, camps, and speakers' fora.
 - c. Publications
 - d. Development, updating and maintenance of databases
 - e. Position Jamaica as the regional focal point for the Caribbean Energy Information Systems (CEIS)
 - f. Completion of at least one consultancy contract in Energy
 - g. S&T Month activities
 - h. Provision of S&T information packages
11. Facilitating the proper functioning of the Inventors & Innovators Association, established in 1999, with the main objective of fostering development and commercialization of local inventions and innovations.
12. Technology transfer and income generation programmes
 - a. Policies and procedures for technology transfer finalized
 - b. Solar drying technology for farming community improved
 - c. Low cost transfer of tissue culture technology to communities

- d. Production of tissue cultured plantlets as revenue earning school/community project, targeting Rio Cobre Juvenile Boys Home and other schools
13. Programmes to enhance the SRC as a dynamic, innovative, responsive, efficient and effective organization
- a. Certification of quality management system by January 2007
 - b. Accreditation of the analytical laboratory by January 2007
 - c. Implementation of the reclassification/ performance systems and incentive programme
 - d. Analysis of impact of the annual national S&T conference; outpost and SSTS activities determined and assessed.

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Minister

Ministry of Industry, Technology, Energy and Commerce
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