

EXECUTIVE SUMMARY

INTRODUCTION

Among its basic functions, the National Agricultural Research Institute (NARI) is tasked with advising on and developing appropriate systems to promote balanced, diversified and sustained agricultural production through adaptive and investigative research. In addition to broad research and development activities for Guyana's non-traditional agricultural sector, NARI is also responsible for transferring the technology it has developed to farmers, students, extension personnel and others interested in agricultural research. NARI's goal is to increase productivity and improve the quality of crops and Livestock for national use and for export.

A medium term Strategic Research and Development Agenda (SRDA) 2003-2005 was developed to direct the Institute's research and development programme. National priorities were the overall guiding force in devising the SRDA. Commodities that were identified for research and development have the following market led/driven considerations:-

- Export potential
- Domestic importance as a food item
- Potential for processing for value added products for the domestic and international markets.

The SRDA for 2003-2005 is based on the firm belief that rapid and diversified research based development, of the " other agriculture" sector, is a *sine qua non* for the holistic development of agriculture in Guyana. While formulating the SRDA, cognizance was taken of the agricultural policy directives in the Poverty Reduction Paper (PRSP) and the emphasis on agricultural diversification of the Ministries of

Agriculture and Fisheries, Crops and Livestock. Taken into consideration, also, were the results of the market surveys conducted by Guyana Economic Opportunities (GEO) project in collaboration with the "New" Guyana Marketing Corporation (NGMC). This project identified high potential commodities/products for the Toronto, New York, London, Northern Brazil and Caribbean markets.

The research and development activities outlined in the SRDA included

- i. Crop Improvement and Production
- ii. Livestock and Pasture Production
- iii. Soil and Water Management
- iv. Biotechnology and Plant Genetic Resources
- v. Crop Protection
- vi. Organic Agriculture
- vii. Information, Communications and Agricultural support services
- viii. Intermediate Savannahs
- ix. Post-harvest Technology and Agro-Processing

Seven departments were created to conduct the various research and development activities. These are:

- The Office of the Director
- Agronomy Department
- The Department of Biotechnology, Plant Genetic Resources and Crop Protection
- Horticulture Department
- Livestock Department
- Post-harvest an Agroprocessing Department
- Soils and Water Management Department

The Institute operated several locations in 2003. These were the Headquarters, Mon Repos; Livestock Farm, Mon Repos; Intermediate Savannahs Field Research Unit, Ebini; Horticultural Station, Timehri; Kairuni Crop Station and Plant Nurseries at Benab, Fort Wellington, Mon Repos, Pouderoyen, Charity, Bartica, Hosororo and Rupununi.

The following highlights the main activities of the Institute and the major results for the year 2003.

OFFICE OF THE DIRECTOR

Research on "New" crop types.

Carrot

From studies conducted at Kuru Kururu and Mon Repos, the varieties Terracota and Amazonia were recommended for further investigation.

Cost of cultivation and production

A farmer's survey to obtain data for estimating the cost of production/cultivation of fruits and vegetables in Guyana is in progress. For pineapple, cost of cultivation (dollars per acre and per hectare) and the cost of production (dollars per tonne and per kg) were computed for the Canals Polder area in Region 3.

Analysis of prices of non-traditional commodities

An analysis of wholesale and retail prices of non-traditional commodities was conducted for Georgetown for the period 1981-2000. Compound annual growth rates were computed for wholesale and retail prices for the 1981 to 1989 (Period I) and 1990 to 2000 (Period II) to show how prices had moved during these two periods.

ORGANIC AGRICULTURE

A cocoa demonstration plot was established in Hosororo in Region 1. About 15,000 cocoa plants were also produced and distributed to the farming community.

At Mainstay, in Region 2, an organic pineapple germplasm and demonstration plot was established. Pineapple farmers in Mainstay/Whyaka also received organic certification in 2003.

INFORMATION, COMMUNICATIONS AND SUPPORT SERVICES

The Library and Documentation Centre received a total of 49 books, 602 Journals and institutional publications and 66 FAO documents.

In the area of Communications, the unit was actively involved in video recording, newspaper article production, school tours, photography, booklet and leaflet production and exhibitions.

The Information Technology Unit was primarily involved in routine maintenance of computers and peripherals and of NARI's website.

SOILS LABORATORY

The Soils Laboratory analysed soil, plant tissue and water samples.

INTERMEDIATE SAVANNAHS

Work in the Intermediate Savannas consisted of activities at the Intermediate Savannas Research Unit, Ebini and an aerial photo-interpretation of four discrete savannah land areas.

SEED TECHNOLOGY

In the area of seed technology, eleven accessions of "black eyed" cowpea were evaluated and four genotypes were identified for further studies. A survey was also conducted of vegetable seed marketing in Guyana.

SPECIAL PROJECTS

The special projects undertaken were management of soursop wasp, peanut production in Region 9, revegetation of Kara Kara mine in Linden, Poor Rural Community Support Services Project (PRCSSP) and demonstration on the use of inoculum with Minica IV.

TRAINING

Eight major training activities were conducted in 2003 in Regions 1, 2, 4, 9 and 10.

AGRONOMY DEPARTMENT

The commodities dealt with were sweet potato, tomato, sweet pepper, brounager, cabbage, bora, ochro, cauliflower and broccoli. The activities were related to crop improvement, crop management and seed production.

In the area of crop improvement varietal evaluations were done for sweet potato, tomato, sweet pepper, ochro, cauliflower and broccoli.

Crop improvement trials resulted in refinement of a technique for the improvement of germination of carrot on coarse sand. The presence of Gemini virus in tomato was also confirmed. Other trials examined agronomic practices for tomato and cabbage. An appropriate potting mixture and soil treatment for seed germination was also determined. The Agronomy department also demonstrated growing of vegetables in sheltered cultivation.

Seed was produced of selected vegetables to ensure that quality seed of locally adapted varieties reach farmers.

DEPARTMENT OF BIOTECHNOLOGY, PLANT GENETIC RESOURCES AND PLANT PROTECTION.

One of the main achievements of this department for 2003 was the propagation of some 8434 plantain and pineapple plantlets by the Tissue Culture Laboratory.

A Plant Genetic Resources Unit was created in 2003. This Unit will assist in the development of Guyana's capability to manage its plant genetic resources for food and agriculture.

The crop protection service processed about 500 plant disease samples during 2003 and diseases/pathogens were identified from 55 crop plant specimens.

A pest management guide for solanaceous crops in Guyana was prepared. Just over 3,000 packets of bait, for the control of Acoushi ants, were produced.

HORTICULTURE DEPARTMENT

Research projects were completed on yield response of West Indian Cherry to NPK fertilizers; breaking dormancy in golden apple seeds, evaluation of organic plant extracts to control anthracnose of papaya and testing of varieties of papaya for resistance to Papaya Ring Spot Virus. Several other projects were on-going.

The total production at all plant nurseries in 2003 was 171355 plants.

LIVESTOCK DEPARTMENT

In 2003, activities of this department included duck breeding, duckling production and forage production.

In the area of duck breeding two new strains of Muscovy ducks, the NARI Solo White Muscovy and the Robin Blue Muscovy were developed.

In 2003, 46, 616 duck eggs were produced and duckling sales generated G\$0.9M. A total of 93 breeding rams were sold for a total of G\$1,228,670.

A highlight of the sheep programme was the collation of the production parameters generated at the farm during the 2000 - 2003 period.

The Livestock Department was also involved in the development of a management strategy for the grazing of antelope grass.

POST HARVEST AND AGRO-PROCESSING DEPARTMENT

This department completed a project on post-harvest fungicidal treatment of fresh cassava which resulted in the storage of cassava tubers for up to 18 days. Another project examined preparation of fruit juice/drink blends from pineapple, carambola and passion fruit.

There were also evaluations of post-harvest treatment applications for the control of anthracnose of papaya and the use of banana fruit as a base for conversion to value added products.

SOILS AND WATER MANAGEMENT DEPARTMENT

A major achievement of this department was the formatting and compilation of 89 soil and land use survey reports on compact disc.

The department also completed research projects on the use of liquid manure in vegetable production, evaluation of the efficacy of different strains of Rhizobia on nodulation and nitrogen use of cowpea on clay soil and the effect of liming on the growth of tomato on a coastal clay soil.

HUMAN RESOURCE REPORT

A total of 26 persons were recruited during 2003 bringing the total number of persons on staff to 265.

Staff members benefited from training both locally and overseas.

FINANCIAL REPORT

Capital expenditure for 2003 was G\$11,248,912. The operating income was G\$212,098,384.

Audit of the 2003 report was completed.