NON SUGAR SECTOR STRATEGIC PLAN 2003/2007
(R&D & RELATED PRIORITIES/PROPOSALS)

(1) Onions: (p.23):
   a. Introduction and Evaluation of new varieties (AREU)
      Started late 90’s – 9 varieties recommended for commercial production since
      2000-ongoing
      Financing – own budget
   b. Extension of growing season
      On-going – own budget
   c. P-H Quality Management – onion curing
      Ongoing

Policy: - Investigate the possibility of using modern technologies for onion production
         (biotech, hydroponics, etc).
         - Extend findings of successful onion pilot projects led by AREU on a larger
           commercial scale
         - Intensify programme in Rodrigues for new variety trials and water management
         - Investigate into possibilities of value addition to onions both in Mauritius and
           Rodrigues.

(2) Cooking Tomato
   With MSIRI up to 2001 (taken over by AREU since)
   a. Introduction of new varieties (continuing) by AREU since 2000

Policy:
   a. Strengthen programme on introduction and selection of new varieties with a view to
      identifying high yielding varieties particularly suited to our climate and processing.
      On-going
   b. Encourage the use of modern techniques of production for instance hydroponics with
      a view to increasing yield and quality
      On-going (6 in 1998 increased to 28 in the yr 2000) (i.e. hydroponics)
   c. Reinforce Research initiatives with a view to addressing immediate problems faced by
      farmers such as disease diagnosis and control, and pesticide usage.

Policy for foodcrop sector (p. 37)
   (iii) Encourage the adoption of new technologies towards a modern agriculture to
        enhance production in terms of volume and quality and sensitize planters on efficient
        methods of irrigation.
(iv) Reinforce Research & Development efforts towards producing high-quality planting material locally (hybrid seeds and tissue culture plantlets) with a view to decreasing current imports.
(xvii) Invest into Research possibilities in biotechnology to create novel varieties of locally grown foodcrops with conferred novel traits such as disease resistance, increased yield, enhanced shelf life of perishables, etc.

(3) Fruit sector (p. 41)
R&D and Objectives (of AREU) – Present (p.42)

Barkly E.S. Research initiatives in fruits have been essentially directed towards optimisation of techniques of rapid propagation and cultural practices (p.44)

3.1 Pineapple (p.47)
Encourage R&D on
(a) Quality of planting material, cultural practices and breeding of range of commercial varieties
(b) Pest and disease control
(c) Development of P/H handling techniques
(d) Development of an efficient packaging system to extend the shelf-life of the local pineapples and
(e) Organic production of pineapple

3.2 Litchi
(ii) Introduce and evaluate new varieties
(vii) Investigate into alternative, quicker and better methods of production of planting material

3.3 Mango
(i) Pilot orchards for evaluation of new varieties
(v) Encourage mass propagation of high quality and high yielding planting material for specific fruit varieties thro’ the use of biotechnology
(vi) Encourage research in post harvest handling techniques and value-addition to the local produce.

(4) Ornamentals: R&D

(i) Carry out a study on the Anthurium sector – to identify the major threats

(ii) Strengthen research locally into finding potential substitutes to bagasse and look into the possibility of importing potential alternative growing substrates, such as coco peat from Agalega.

(iii) Initiate research in the development of new varieties of Anthurium and other potential commodities thro’ genetic engineering with the coming into operation of the MABI
(iv) Reinforce research into effective and plausible soil sterilisation techniques including biotech. control methods.

(5) Crop Protection (p. 64)
(vii) Reinforce quarantine research

Research towards Maintenance and Improvement of Plant Health (p. 66)

- Pest and disease control methods (pre and post harvest) to be reinforced with emphasis on ecologically sound methods with the implementation of area-wide control programmes. How?

   (i) Optimise the use of molecular tools for diagnostic works
   (ii) Strengthen research on control of fruit flies and Diamond Back Moth, initiate research on Sterile Insect Technique and conduct feasibility studies on eradication of the main species
   (xii) Undertake studies on eradication of melon fly, a key pest of cucurbits
   (iv) Adopt alternative quarantine treatments to methyl bromide which will be banned in the future
   (v) Strengthen technical support for proper pest and disease management of nurseries with respect to accurate and timely diagnosis of crop protection problems;
   (vi) Provide appropriate seed treatment facilities for the planting community;
   (vii) Make provision for seed health testing and certification within existing legislation;
   (viii) Identify new varieties of cultivars tolerant to major diseases;
   (ix) Update on a continuous basis the list of commonly occurring pests and conduct trials on control methods;
   (x) Update list of stored product pests and conduct trials on quarantine pests and fumigation methods;
   (xii) Promote and develop Integrated Pest Management Programmes and establish a pest and disease control programme for organic agriculture.

(6) Planting Materials/Seeds (p.68)

- Proposed MABI (p. 71) – to provide a strong research support in the production of better quality seed including hybrid seeds with higher yield benefits at more competitive prices, and to also act as a catalyst for the development of seed production for export.

Local Seed Production

(ii) Attempt to improve seed viability and remove seed dormancy thro’ proper experimentation

(iii) Investigate into the possibility of seed processing to reduce storage intervals and minimise seed ageing and quality deterioration

- To improve quantity and availability (p.72)
(ii) Research into improving seed multiplication rate

(7) Other Planting Materials

(iii) Use biotechnology for more efficient mass propagation of planting material in demand

(ii) Review and redefine the plant propagation activities of tissue culture lab of FARC & Barkly E.S. to be able to better respond to our national priorities

(iii) Strengthen the research activities to support plant propagation by establishing links with research institutions, public or private, such as UOM, AREU, MSIRI and Microlab.

(8) Germplasm & Biodiversity (p. 77 – 6.5 Local Status)

The absence of such framework in Mauritius regulating Intellectual Property Rights and safe trans-boundary movement of crops will severely limit accessibility to new varieties for crop improvement programmes and to novel crops. The current legislative void also discourages production of new plant cultivars by local plant breeders as well as the emergence of new horticultural and agro-industrial sectors which make use of exotic germplasm.

(iv) (P. 79): Evaluate the genetic drift in old varieties and landraces

(x) Conduct research related to medium and long-term conservation of germplasm of primitive cultivars and landraces of cultivated crops associated with traditional agriculture and inbred lines of released hybrids.

(9) Biodiversity (p.83)

(ii) In-depth survey of endangered species of endemic plants and fauna and accordingly work out a rehabilitation programme

(iii) Promote appropriate biodiversity research thro' the use of biotechnology

(10) FORESTRY

(p.91): Policy

(vi) Promote the application of modern technologies in the propagation of medicinal plants

(viii) Reinforce research efforts into improvement of quality of seeds and planting materials for production of timber yield.

(11) Organic Agriculture)
Research initiatives on organic farming be reinforced by the UOM, AREU and the MRC.

(i) make an inventory of demands and consumer tendencies at the local level.

(12) Livestock Sector

12.1 Poultry: (p.102)

(vi) Reinforce R & D within the sector, particularly in the field of pathology, processing and vaccine development against common local diseases

(ix) Possibility of production of maize and other raw materials in Rodrigues

12.2 Duck Rearing

On-going R&D Programme:

(i) Development of high-yielding meat strains by selective breeding

(iv) Conduct research on duck nutrition

12.3 Goat (p.107):

(ii) Encourage research in breeding programmes for environment tolerance and adaptability as well as disease resistance and better meat quality

(vi) Reinforce research into means of conservation of fodder and grass to cater for periods of scarcity.

12.4 Pork/Pig

(i) Finding the applicability of integrated farming system in the local context

(ii) Foster research and strengthen extension on pig husbandry and study the need for introducing new genetic material.

12.5 Venison & By-Products (p.112)

(i) Carry out a study to determine the prospects for expansion in this subsector with particular emphasis on increase in production under the feedlot system, the use of modern methods of nutrition and breeding, value-addition and marketing prospects.

(ii) Determine the optimum deer population density on leased state-owned forest lands in as far as it is compatible with sustainable forestry.

(iii) Reinforce research and development to promote intensive farming.

12.6 Animal Health (p.119)

(iv) Strengthen research initiatives on the production of vaccines against recurrent diseases inflicting the local livestock sector, e.g. Infections Bursal Disease & Newcastle in poultry.

12.7 Farm Animal Genetic Resources (p.121)
(i) Make an inventory of existing animal genetic resources focusing on major livestock species such as cattle, goat, sheep, pig and poultry in order to identify breeds at risk of extinction.

(ii) Take measures to characterise breeds at the molecular level

(iii) Intensify regional and international cooperation in the field of animal genetic resources, in terms of exchange of germplasm and joint collaborative research programmes.

(13) APICULTURAL SECTOR (p.124)

(v) Strengthen technical assistance to beekeepers thro’ R & Extension Service especially with reference to management of colonies, avoiding risks of inbreeding, propagation of queens and processing and bottling techniques.

(14) Tea Sector (p.126)

Policy (p. 127)

(i) effect a survey on the pest and disease status in this sector, and accordingly reinforce research and precautionary measures to minimise losses caused at this level.

(15) Tobacco Sector (p.128)

R & D (p.129)

AREU, on-going – Crop production and protection

Agricultural Services: Tobacco seed production; provided free of charge to growers.

AREU objectives:

(i) to enhance yield/productivity and quality of locally grown tobacco
(ii) to minimise cost of production to render the industry more competitive

Research Activities of AREU focus on:

(i) Introduction and evaluation of improved germplasm
(ii) Seed and seedling technology
(iii) Productivity and quality improvement
(iv) Crop damage reduction &
(v) Post harvest management

Tobacco Board: Established links exist with research for on-farm trials and diffusion of research results.

Cess on domestic leaf tobacco to finance a Special Research Fund managed by Tobacco Board (other funds also exist).

Policy:
(i) **Create a Tobacco General Fund** to finance, inter alia, (from cess money) a **Research Scheme**

(ii) **Set up a Tobacco Research Advisory Committee** under aegis of Tobacco Board to advise on research within the sector, with a view to reinforcing research carried out presently by AREU and better coordinating research needs, programmes and the diffusion of research findings.

(16) **Rodrigues**

(i) **Studies on vacuum packing of pickled lemon, Toupie lemon (MRCproject). (On-going)** 
Vacuum packing of pickled fruits and vegetables.

(ii) **Dried Rodriguan local Red Beans for export:**
(a) Methods of increasing yield while preserving typical local characteristics of the variety
(b) Post-harvest drying and packing techniques to ensure optimum quality and premium prices for export market: solar or conventional drying techniques could be investigated.

**Policy:**

(a) (i) **Survey of agricultural activities in Rodrigues (CSO)**

(ii) **Rehabilitation of Rodriguan lemon & chilli cultivation on pilot scales:** thro’ propagation of selected elite varieties by grafting and improvising drip irrigation systems and hydroponic production technique in dry areas.

(iii) **Maintain organic status of island (decrease use of agro-chemicals)**

(iii) **Reinforce research into various aspects of production including early disease diagnosis and identification of potential commercial crops that can be cost-effectively grown**

(iv) **Introduction of new varieties of cash crops for developing export**

(Livestock) P.143

(v) **Reinforce research in the livestock sector**

(17) **Agro-Industrial sector** (p.144)

**Policy:** (i) **Identify primary products usually imported for agro-processing, that can be cost-effectively produced locally and regionally**

(xvii) **Reinforce research in food-processing technology mainly geared towards finding efficient means of preservation of specific seasonal food commodities.**

(18) **NEW TECHNOLOGY CH 18:** (p.165)

**Greenhouse cultivation, Hydroponics & Aeroponic Culture** (p. 174,177)
Under the Agricultural Technical Cooperation Scheme (Project trials initiated in 1998 at Belle Vue E.S.). Culture experiments on various vegetables and fruits, carried out currently: tomato, cucumber, bitter gourd, lettuce, celery, muskmelon, cherry tomato, etc.)

**Aeroponic Culture**

(i) Investigation of the possibility of promulgating this cultivation technique: conduct evaluation studies in order to assess the suitability and the potential of this technique in the local context with regard to certain crops of national priority such as potato.

(ii) Conduct a pilot project to investigate the technical and financial feasibility and sustainability of aeroponics culture in Mauritius.

**IT/ICT in Agriculture (p.178)**

To carry out an information needs assessment, based on the objective and mandate of each institution within the Ministry, to gauge the kind of data to be collected, stored and provided access to by potential users.

**R & D (p.181)**

(i) To invest in strategic Research and to build up the appropriate mechanism to coordinate demand-led research in a constructive framework to reach the aim of R & Technology transfer being able to spearhead the improvement in production and sustainability of the agricultural sector;

(ii) For agricultural sector to be its own driving engine (financially self-reliant) - **Introduction of user-Pay Services** to be the driving motor in sustaining proactive R & D and technology transfer initiatives.

**Policy:**

(i) Encourage private sector participation in the agricultural reform programme by devising a framework for a demand-led R & D Programme

(ii) Encourage private sector involvement in the optimal use of existing facilities as well as future facilities to be provided by the proposed MABI and Food Laboratory.