

# FOOD AND AGRICULTURAL RESEARCH AND EXTENSION INSTITUTE

ANNUAL REPORT

2023/2024



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## Abbreviations

ACGC	Audit and Corporate Governance Committee
ADG	Average Daily Gain
ADMA	Agricultural Development Marketing Association
AEC	Agricultural Entrepreneur Clubs
AFRA	African Regional Cooperative Agreement
ANSO	Alliance for International Science Organisation
AMB	Agricultural Marketing Board
AMF	Arbuscular Mycorrhizal Fungi
APMIS	Agricultural Production and Management Information System
AREU	Agricultural Research and Extension Unit
APRC	Agro Processing Resource Centre
AVRDC	The World Vegetable Center (Asian Vegetable Research and Development Centre)
AWC	Agricultural Women Clubs
AYC	Agricultural Youth Clubs
BAP	6-benzyladenine
BDU	Business Development Unit
BFU	Bio-Farming Unit
BLU	Building and Land Use
BCMV	Bean Common Mosaic Virus
BYMV	Bean Yellow Mosaic Virus
BBTV	Banana Bunchy Top Virus
BMRS	Belle Mare Research Station
BSD	Biometry and Statistics Division
BSF	Black Soldier Fly
CAADP	Comprehensive Africa Agriculture Development Programme
CAD	Computer Aided Design
CATAS	Chinese Academy of Tropical Agricultural Sciences
CEB	Central Electricity Board
CEO	Chief Executive Officer
CFS	Committee on World Food Security
CIAT	Centro Internacional de Agricultural Tropical
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement
CLRS	Curepipe Livestock Research Station
CNESTEN	National Center for Energy Sciences and Nuclear Techniques
CP	Crude Protein
CRA	Corruption Risk Assessment
CRS	Crop Research Station
CSA	Climate Smart Agriculture
CSG	Contribution Sociale Généralisée
DAP	Days after planting
DBM	Diamondback Moth
DBM	Development Bank of Mauritius

DC	Demonstration Centre
DeSIRA	Development Smart Innovation through Research in Agriculture
DNA	Deoxyribonucleic Acid
DM	Dry Matter
DPC	Defined pension contribution
DUS	Distinctness, Uniformity and Stability
DVS	Division of Veterinary Services
ECCEA	Early Childhood Care and Education Authority
EU	European Union
ERP	Enterprise Resource Planning
ETA	Exudative Tube Application
FARC	Food and Agricultural Research Council
FAREI	Food and Agricultural Research and Extension Institute
FC	Finance Committee
FCC	Financial Crime Commission
FSF	Food Security Fund
FTS	Farmer's Training School
FYM	Farmyard Manure
GCCA+	Global Climate Change Alliance - plus
GNPCPC	Ghana Cleaner National Production Centre
HBG	Home Biogas
HRDC	Human Resources Development Council
HWT	Hot Water Treatment
IAEA	International Atomic Energy Agency
IAS	International Accounting Standards
ICAC	Independent Commission Against Corruption
IT	Information Technology
ICT	Information and Communication Technology
IFAC	International Federation of Accountants Committee
IFRS	International Financial Reporting Standards
IPM	Integrated Pest Management
IPSAS	International Public Sector Accounting Standards
IPSASB	International Public Sector Accounting Standards Board
KPIs	Key Performance Indicators
KSNM	KSNM Drip fertigation system
LAMP	Loop-mediated isothermal amplification
LFPS	Livestock Feed Promotion Scheme
LPDE	Low-Density Polyethylene
MAIFS	Ministry of Agro Industry and Food Security
MF	Model Farm
MITD	Mauritius Institute of Training and Development
MOESWM&CC	Ministry of Environment Solid Waste Management and Climate Change
MoU	Memorandum of Understanding
MPSAIR	Ministry of Public Service, Administrative and Institutional Reforms

MQA	Mauritius Qualification Authority
MS	Murashige and Skoog
MRIC	Mauritius Research and Innovation Council
MSB	Mauritius Standards Bureau
MSPA	Mauritius Sugar Planters Association
NAA	Naphthaleneacetic acid
NAO	National Audit Office
NAP	National Agricultural Programme
NCC	National Cooperative College
NGO	Non-Governmental Organisation
NPF	National Pension Fund
NPK	Nitrogen Phosphorus Potassium
NTA	National Transport Authority
NTRS	National Training and Re-Skilling Scheme
PIE	Public Interest Entity
PLRV	Potato Leaf Roll Virus
PML	Polytechnics Mauritius Ltd
PSE	Public Sector Entities
PVX	Potato Virus X
PVY	Potato Virus Y
OSHA	Occupational Safety and Health Act
RAC	Rooted Apical Cuttings
R&D	Research and Development
RDT	Research, Development and Training
RE	Renewable Energy
REKIR	Research and Extension Key Information Repository
RH	Relative Humidity
RS/SRS	Research Scientist/ Senior Research Scientist
RVAA	Regional Vulnerability Assessment and Analysis
SADC	Southern African Development Community
SAGP	Switch Africa Green Project
SANOI	Sécurité Alimentaire et Nutritionnelle de la région Océan Indien
SC	Staff Committee
SFWF	Small Farmers Welfare Fund
SICOM	State Insurance Company of Mauritius Limited
SMC	Strategic and Monitoring Committee
SMS	Short Message Service
SPNF	Subhash Palekar Natural Farming
UNDP	United Nations Development Programme
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
USDA	United States Department of Agriculture
VAA	Vulnerability Assessment and Analysis
VAM	Vesicular Arbuscular Mycorrhizal
XCC	<i>Xanthomonas campestris</i> pv. <i>campestris</i>

## Chairperson's Statement

I am pleased to present the Annual Report for FAREI for the period from July 2023 to June 2024. FAREI has continued its commitment to research development, training, focusing on increasing productivity, promoting sustainable agricultural practices, enhancing food and nutritional security and safety.

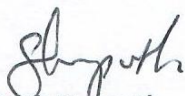
Throughout the year, several significant events that highlighted FAREI's achievements and progress were organised. A major highlight was the second edition of the Agricultural Science Exchange Forum, themed "Enhancing Agrifood Sector through Research, Development and Innovation for Resilience." This forum provided an excellent platform for collaboration among researchers, extensionists, and farmers. A book of Abstract that provides a glimpse of the diverse research and innovation initiatives underway in Mauritius was published.

In conjunction with the EU-DeSIRA funded project, the FAREI also hosted an Entrepreneurship Week, featuring presentations and exhibitions that highlighted business opportunities within the agricultural sector. This event allowed successful agro-entrepreneurs to share their experiences and products, fostering a spirit of innovation and collaboration in our community.

This year also marked a significant step in our collaborative efforts, as we signed a Memorandum of Understanding with Polytechnic Mauritius. This partnership aims to develop and deliver joint training programs, conduct research, provide professional assistance and consultancy, thereby enhancing FAREI's capacity to support the agricultural sector effectively.

To further strengthen the organisation human resource, training opportunities were offered to build capacity of the staff both locally and abroad through participation in workshops, seminars, and conferences. These initiatives have equipped our team with the latest knowledge and skills necessary to address the current challenges in agriculture.

With the new board being constituted, I will, to my best of capabilities ensure that FAREI will thrive into the future challenges of agricultural sector in Mauritius and will bring sustainable solutions to planters, farmers and any stakeholders, with a view to attain auto sufficiency in the production of several agricultural products. It is also the commitment of the FAREI team to progress into bio productions and provide healthier solutions to our community. I wish to express my sincere appreciation to the management and staff of FAREI for their relentless efforts in serving the farming community and stakeholders, despite the challenges faced in the agricultural sector and rely on their unwavering support for the future.



**Ritesh Sumputh**  
Chairperson

## Chief Executive Officer's Statement

I am pleased to highlight the achievements and progress made by FAREI for the year under review.

Our research efforts in crop development have yielded promising results across 20 key crops, showcasing the potential for innovation in Mauritian agriculture.

For potato, the variety Everest outperformed Spunta in the first season with higher yields and a significantly greater percentage of marketable tubers. Panamera excelled in the second season, proving superior to standard varieties. Additionally, four local potato clones exhibited strong resistance to late blight, a critical factor in reducing fungicide usage. Four hybrid onion varieties under evaluation have shown excellent performance, making them promising candidates for future release. For tomatoes, hybrid varieties were tested for yield and desirable fruit traits, while the open-pollinated variety Jupiter received high praise from growers and seed multiplication is being undertaken for distribution to growers. In 2023, the chilli variety Senturi, tolerant to anthracnose was released for cultivation. Several other varieties are also in the pipeline for release to growers. Kailaan (Chinese broccoli) varieties NKL 01 and KL02 are set for release in late 2024, alongside the Swiss Chard varieties Fordhook Giant, Greenwave, Lucullus, Charlie, and Argentata. Research continues into heat-tolerant varieties of beans, pulses, climbing beans, quinoa, peanuts, sweet potatoes, snap beans, and peas. The cultivation of broad beans and big-podded pigeon peas is also being encouraged. Selected crops and ornamentals were evaluated under protected structures, identifying several varieties for potential release.

We are also focusing on development of planting material, particularly for potato, with significant emphasis on pre-basic G1 seed production for the Vigora variety. For bananas, a germplasm conservation plot has been established to support elite sucker production and mass propagation. To enhance the value of local produce, research into food preservation, shelf-life extension, and waste reduction resulted in the development of 15 new processing protocols and completed studies on 10 value-added products.

We continue evaluating systems and equipment that promote sustainable production, efficient water, and fertilizer use. A model agroforestry plot covering five arpents has been set up in Britannia for testing and demonstration to local farmers. Our disease and pest management strategies focus on eco-friendly approaches, such as use of natural enemies, light traps, and biopesticides. These practices are crucial in addressing the concerns of local growers.

In the livestock sector, our focus on enhancing livestock production through innovative research and sustainable practices has yielded promising results. Studies in animal nutrition underscored the importance of strategic feed choices. Significant progress was made in the cultivation and assessment of various fodder species and enhancing our fodder germplasm collection, which are vital in implementing sustainable livestock production. Our endeavour included integrating diverse fodder species into cropping systems, developing simple technologies for hay baling, and employing Near Infra-Red (NIR) spectroscopy to assess fodder quality. Our commitment to improving milk quality was evident in the substantial reduction of subclinical mastitis incidence.

Moreover, training sessions on milk processing have equipped farmers with the skills to add value to fresh milk, particularly in ice cream production. In collaboration with international experts, an assessment of locally produced pigs was carried out, leading to the development of a grading system to enhance meat quality. This initiative aimed at aligning local production with consumer expectations and industry standards. Conservation efforts for Creole cattle continued during the year in addition to evaluating the performance of imported Holstein-Friesian cattle, with progenies showing improved milk production and reproductive performance. The genetic improvement program for goats made steady progress toward enhancing both meat and dairy production. Another important project consisted of the setting up of a silvopastoral system to promote sustainable practices for building resilience in the livestock sector in the face of climate change.

The Extension and Training Department focused on promoting sustainable agricultural practices. Significant efforts were devoted to promoting climate-smart technologies, with a strong emphasis on minimizing the use of chemical inputs and encouraging the adoption of biopesticides, agroecological methods, and integrated approaches to farming. During the year some 6,031 hectares were dedicated to vegetable production and 1,210 hectares to orchards, involving a total of 12,934 planters. Advances in protected farming were also evident, with significant expansion in greenhouses, hydroponics, and net houses. Our Extension officers undertook 16,250 advisory visits, attended to 20,252 office calls, and organized 224 extension activities that reached nearly 3,000 farmers. Training and field demonstrations focused on critical areas such as integrated pest management, soil fertility, and the adoption of new crop varieties. The introduction of meteorological stations at key model farms enhanced decision-making in irrigation and pest control, addressing the challenges posed by climate change and rising production costs. The division also responded effectively to the damage caused by Cyclone Belal, implementing relief schemes to support farmers in rehabilitating their crops and infrastructure. Livestock extension services continued to play a vital role, with training and support provided across various sectors, alongside the processing of numerous applications for grants and permits. Through targeted training and information dissemination, the division empowered women, youth, and agro-entrepreneurs, fostering greater participation in agriculture and agro-processing. Additionally, the promotion of innovative farming techniques, coupled with support for research and development, ensured continuous improvement in agricultural productivity and sustainability. The Crop Extension and Training Department remains committed to advancing sustainable agriculture and supporting the farming community in overcoming the challenges of today's dynamic agricultural landscape.

The Biofarming Unit promoted organic and sustainable farming practices through training, advisory services, community projects, and the promotion of organic produce while the Biometry and Statistics Division provided monthly food crop statistics to relevant stakeholders. The Business Development Unit facilitated numerous government schemes, assisting 471 projects with a grant amount of about MUR 80 million. Site visits ensured proper implementation, while 501 applications for agricultural state land were evaluated, and 71 bank loan applications were processed. The unit played a crucial role in empowering farmers and entrepreneurs in the agro-industrial sector.

The Engineering Division provided technical support for various projects, including the design and implementation of composting facilities, irrigation systems, and solar photovoltaic systems. They also supported infrastructural projects at research stations and assisted in vehicle maintenance.

The IT Section advanced FAREI's technological capabilities, deploying the Research and Extension Key Information Repository (REKIR) system to streamline research and extension activities. They also launched the TaMIS Human Resource and Payroll System and initiated the "Bazar Moris" e-commerce marketplace. A new Farmer Information Delivery System (FIDS) was initiated to develop and provide timely agricultural information to the farming community.

The Procurement Section conducted 86 bidding exercises, ensuring the acquisition of quality goods and services while adhering to the Public Procurement Act 2006. Expenditure for the period amounted to MUR 103,030,643.72, reflecting the section's efficiency and adherence to procurement standards.

FAREI maintained its commitment to a safe working environment through continuous risk assessments and stakeholder engagement. Efforts to improve workplace conditions are ongoing, with a focus on minimizing risks and ensuring proper communication of safety procedures.

In summary, FAREI has made significant strides in promoting sustainable agriculture, supporting farmers and entrepreneurs, and enhancing the technological and infrastructural capabilities of the agricultural sector. The organisation remains committed to its mission of advancing agriculture in Mauritius through innovation, collaboration, and sustainable practices.

As we look ahead, our focus remains on innovation, sustainability, continued support and training of farmers and collaboration. I am confident that the initiatives undertaken will continue to contribute to the advancement of the non-sugar crop and livestock sectors as well as in extension, ensuring food security and improving the livelihoods of our farming communities.



Micheline Seenevassen Pillay  
Officer in Charge

## Section 1: Vision, Mission and Objectives

### VISION

To help steer and promote the sustainable development of the National Agri-food System through the efficient and effective application of Research, Development and Training (RDT).

### MISSION

To support and implement priority RDT programmes for food security and to enhance competitiveness, sustainability and stakeholder equity across the value chain.

### OBJECTIVES

1. Introduce, develop and promote such technologies in the food and non-sugar agricultural sector within a sustainable framework.
2. Co-ordinate, promote, and harmonise research activities in the non-sugar agricultural, food production and forestry sectors.
3. Promote and encourage agricultural and agri-business development through the setting up of agricultural youth clubs, and agricultural women clubs and agricultural entrepreneur clubs; and
4. Promote dissemination and practical application of the results.

### STRATEGY

The Institute employs a strategic and adaptive research approach in a participatory framework involving stakeholders aiming at addressing national needs to improve farm productivity and income. By leveraging the potential of ICT, the FAREI also aims to ensure the rapid transfer of innovative practices developed into relevant production systems in order to benefit growers, consumers and the environment.

### SERVICES PROVIDED

- Evaluation of agricultural inputs
- Training of farmers in production practices
- Advisory service and publications
- Pest and disease diagnostics
- SMS disease alert
- Processing and hot water treatment of seed
- Interface between the farming community and service providers
- Information dissemination
- Facilitating access to incentive schemes and inputs
- Training in agro-processing for product development
- Provision of statistics of foodcrop and livestock

## LINKAGES

During the reporting period, the FAREI continued its collaboration with local institutions namely, the Mauritius Chamber of Agriculture in the development of climate smart practices, the Faculty of Agriculture, University of Mauritius, in the hemp project, the Regional Training Centre in providing specific trainings, the Human Resources Development Council, the Ministry of Finance and Economic Development, the National women Entrepreneur Council, the MOESWM&CC, inter alia, in the implementation of various projects.

In its endeavor to develop and strengthen linkages with international organisations, FAREI pursued activities under the IAEA/AFRA project and collaborated with the CIRAD, Réunion in several activities under the EU-DeSIRA, the Food Sec Semence, the Sécurité Alimentaire et Nutritionelle de la region Océan Indien and DP-Biocontrol projects. The FAREI also collaborated with the UNDP Mauritius country office for the Bazar Moris e-platform project, the Switch Africa Green Project for the biogas project being implemented at CLRS and the seaweed project. The Chinese Academy of Tropical Agricultural Sciences (CATAS), some staff had the opportunity to follow online workshops organized by the Academy.

New linkage was established with Polytechnics Mauritius Ltd, through signing of an MOU for joint collaboration in development and delivery of training programme, conduct of research and professional assistance and consultancy.

## Section 2: Organisational Structure

The FAREI came into operation on 14 February 2014 by virtue of section 24 of the FAREI Act 2013, further to the repeal of the Food and Agricultural Research Council Act 1985. It operates under the aegis of the Ministry of Agro Industry and Food Security (MAIFS).

The FAREI was established following the merging of the Food and Agricultural Research Council (FARC) and the Agricultural Research and Extension Unit (AREU). It has been established with a view to improve the cost-effectiveness and quality of services and optimise human resources.

The FAREI is administered by a Board. It is managed by a Chief Executive Officer, who is responsible for the execution of the policy of the Board and for the control and management of the day-to-day business of the Institute. Its management team comprises three Assistant Directors.

The FAREI's research and development programme is conducted by the following departments:

- **Crop Research Department**

There are six Divisions under the Crop Research Department namely, Agronomy, Vegetable and Ornamentals Research, Fruit Research, Resource Management, Plant Pathology and Entomology. Research aims at the establishment of sustainable production systems and the development of improved cropping technologies. It focuses on the development of novel varieties through breeding and biotechnology, optimal resource utilization, finding solutions for pest and disease control and management and as well as on value-addition through agro-processing.

- **Livestock Department**

The livestock Department is made up of the Animal Production, Feeds and Fodder and Animal Health Divisions. Research aims to respond to farmers' needs in raising the production and productivity of livestock enterprises by developing improved management practices and techniques, feeding packages using locally available feed resources, evaluation of new fodder crops, introduction of improved breeds and genetic improvement and the conservation and utilisation of animal genetic resources.

- **Extension and Training Department**

Three Divisions namely Crop Extension, Livestock Extension, and Information and Training operate under the Extension and Training Department. The Department aims at increasing farmers' knowledge and skills to improve farm productivity and income through timely cost-effective transfer of innovative production practices and a participatory approach. The Department has a comprehensive network of sub offices, model farms, demonstration centres and a Farmer Training School to meet its objectives. With the growing challenges in agriculture, it promotes professionalization of farm operations and promoting value-addition and agri-business development.

- **Support Services**

### **Biometry and Statistics Division**

The Division is responsible for providing statistical support and advice to the technical cadres of the Institute in their research and extension activities. Research Divisions are also assisted in developing research protocols, design and layout of experiments and field trials, data analysis and interpretation of results.

### **Engineering Division**

The primary activity of the division is to provide technical support to the Institute in the implementation of R&D projects through designing and preparing of scopes of work for infrastructural projects and specifications for procurement of equipment. Additionally, the Division provides engineering support to empower potential and existing local agricultural operators in various areas such as hydroponics, sheltered farming, rainwater harvesting systems and more.

### **Business Development and Economics Unit**

Aligned with its objectives, the Unit offers support services to prospective entrepreneurs interested in the agri-business sector. Key activities include providing of information to visitors at FAREI Head Quarters, offering advisory service and business facilitation and delivering technical assistance for preparing appropriate business plan.

The core activities of the BDU, amongst others, are to:

1. Coordinate and process numerous applications under different agricultural Schemes provided by Government
2. Monitor the implementation of projects under the different Schemes and
3. Promote and encourage Agri-business in line with Government policies.

### **Administration Section**

The administration section assists management to achieve FAREI's goals. Support is also provided for the implementation of R&D activities to ensure effective management of overall activities and ensure good Corporate Governance.

### **Procurement Section**

The Procurement Section and its staff play a key role in helping FAREI achieve its goals and objectives by ensuring effective and efficient procurement and supply processes. The Section aims to add value to the organisation by securing quality goods and services at competitive prices while ensuring value for money. All approved requests for goods, works, consultancies and services are processed by the Section in accordance with Rules and Regulations of the Public Procurement Act 2006, the Financial Management Manual and the Code of Ethics of the FCC.

### Health and Safety

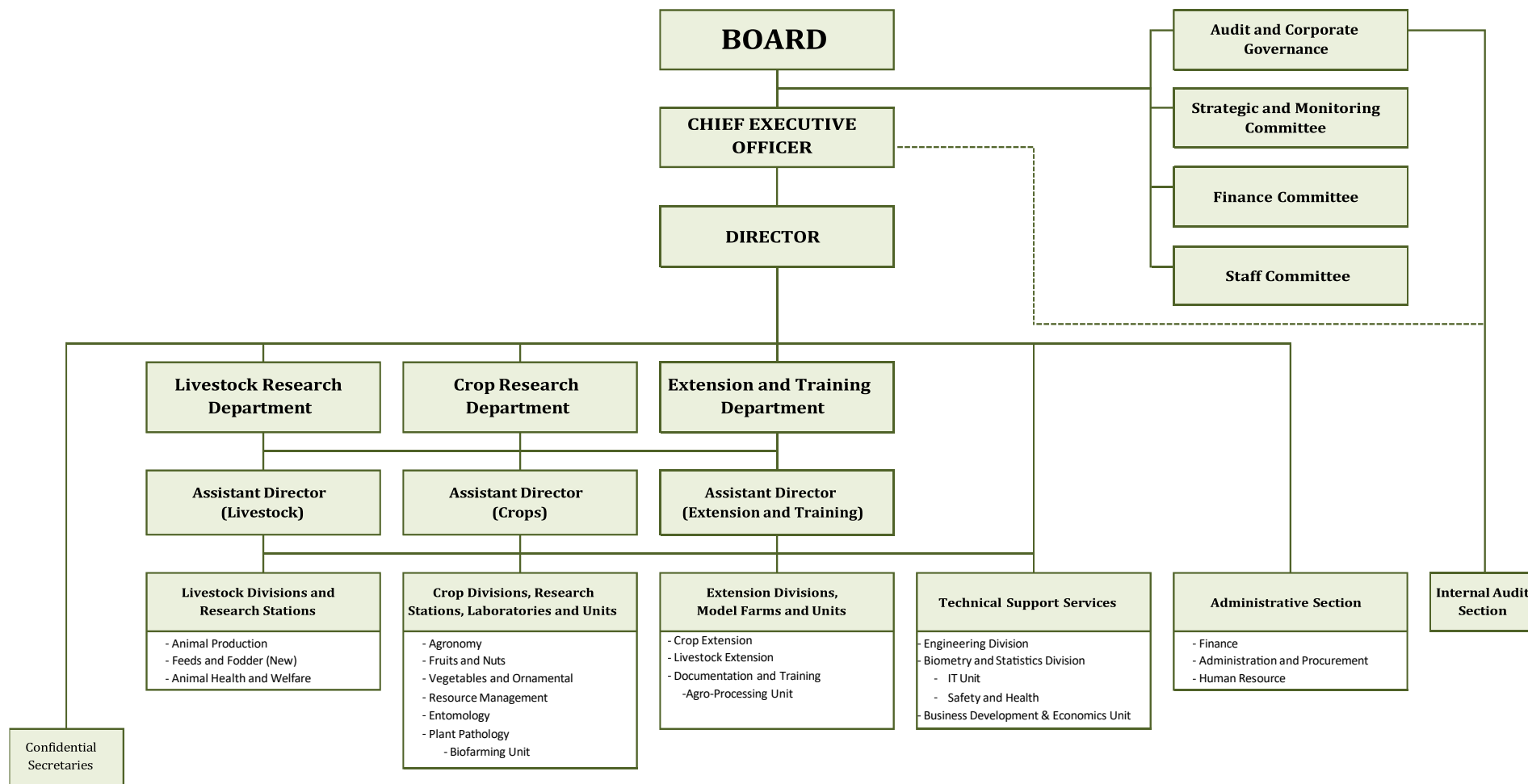
FAREI recognises the importance of a safety and health culture. It upholds its commitment to provide a safe working environment to its employees through the involvement of all parties, namely management, employees and trade unions. It adopts a participatory approach to continuously improve working conditions. The aim is to minimise risks and health hazards through regular risks assessments and minimal exposure to hazardous environments. The FAREI advocates for proper flow of communication for enforcement of safety and health procedures and for employees to protect themselves as well.

### IT Unit

The IT Unit at the FAREI plays a vital role in supporting and enhancing the organisation's technological infrastructure and operations. The Unit is responsible for managing and maintaining the organisation's technology infrastructure, including computer systems, networks, servers, and databases. It ensures that the infrastructure is secure, reliable, and up to date to support the institute's research and extension activities. The IT Unit is instrumental in leveraging technology to improve agricultural research, extension services, data management, and overall operational efficiency. These efforts contribute to the sustainable development of the agricultural sector by harnessing the power of information and communication technology.

# Food and Agricultural Research and Extension Institute

## Organigram



Note: The Confidential Secretaries provide services to the Directorate Team

## Section 3: Corporate Governance Report

The Food and Agricultural Research and Extension Institute (FAREI) was established as a body corporate under the FAREI Act 2013. It operates under the aegis of the Ministry of Agro-Industry and Food Security. The FAREI became operational on 14 February 2014 and its main objectives and functions are spelt out at sections 4 and 5 of the FAREI Act 2013.

### Objects of the Institute

The objects of the Institute as spelt out at section 4 of the FAREI Act are:

1. To introduce, develop and promote such novel technologies in the food and non-sugar agricultural sector as may be approved by the Minister;
2. To coordinate, promote and harmonise research activities in non-sugar agriculture, food production and forestry;
3. To promote and encourage agricultural and agri-business development through the setting up of agricultural youth clubs and agricultural entrepreneur clubs; and
4. To promote dissemination and practical application of the results of any research undertaken under this Act.

### Functions of the Institute

As per section 5 of the FAREI Act 2013, the Institute shall have such functions as are necessary to further its objects most effectively and may, in particular:

1. Conduct research in non-sugar agriculture, food production and forestry, and maximize the benefits of such research;
2. Conduct extension and advisory activities in non-sugar crops, livestock, food production and agribusiness;
3. Set research priorities in line with the needs of the food and non-sugar agricultural sector;
4. Coordinate, monitor and evaluate research programmes and projects of different institutions engaged in non-sugar agriculture, forestry and food production without any prejudice to existing legislation concerning those institutions;
5. Set up and manage research stations, model farms, greenhouses, hydroponic centres and other infrastructure for the purpose of promoting food and non-sugar agricultural technologies;
6. Carry out, subject to the approval of the Minister, such other research and related activities in non-sugar agriculture, food production and forestry; and
7. Advise the Minister generally on national policies and other matters related to research in non-sugar agriculture, food production and forestry.

## **Powers of the Institute**

As per section 6 of the FAREI Act 2013, the Institute shall have such powers as are necessary to attain its objects and discharge its functions most effectively and may in particular:

1. With the approval of the Minister to whom responsibility for the subject of finance is assigned, raise such loan as may be required to finance the setting up of greenhouses, hydroponic centres and other infrastructure;
2. Rent out greenhouses, hydroponic centres and other infrastructure on such terms and conditions as it may determine;
3. Levy fees in respect of services in connection with greenhouses, hydroponic centres and other infrastructure and of transfer of any other food and non-sugar agricultural technologies;
4. Set up research advisory committees;
5. Enter into any contract in accordance with the Public Procurement Act;
6. Sell or exchange any property;
7. Receive grants and donations and raise funds; and
8. To do such acts and things as may be necessary for the purposes of this Act.

As a parastatal body, in line with the Financial Reporting Act 2004, the FAREI acknowledges its responsibility for applying and implementing the principles contained in the National Code of Corporate Governance for Mauritius (2016) (the '2016 Code') and is accordingly conducting its affairs in line with the principles of the 2016 Code. This Corporate Governance Report highlights how the FAREI has implemented the recommendations of the Code.

## **CORPORATE OBJECTIVES STATEMENT**

### **VISION**

To help steer and promote the sustainable development of the National Agri-food System through the efficient and effective application of Research, Development and Training (RDT).

### **MISSION**

To support and implement priority RDT programmes for food security and to enhance competitiveness, sustainability and stakeholder equity across the value chain.

### **OBJECTIVES**

1. Introduce, develop and promote such technologies in the food and non-sugar agricultural sector within a sustainable framework;
2. Co-ordinate, promote, and harmonise research activities in the non-sugar agricultural, food production and forestry sectors;
3. Promote and encourage agricultural and agri-business development through the setting up of agricultural youth clubs and agricultural women clubs and agricultural entrepreneur clubs; and
4. Promote dissemination and practical application of the results.

## STRATEGY

The Institute's approach is to implement strategic and adaptive research in a participatory framework with stakeholders in response to national requirements to improve farm productivity and income. Integrating ICT potential, the FAREI also seeks to ensure that there is a rapid transfer of innovative practices developed into relevant production systems for the benefit of growers, consumers and the environment.

## OUR CORE VALUES AND PRINCIPLES

- **Professionalism**

To demonstrate high level professionalism in our day-to-day initiatives in relation to the business of the Institute and to achieve continuous self-improvement.

- **Commitment**

To develop the right attitude towards the job we undertake, to encourage individual initiative and to express our dedication in achieving our objects and perform our functions.

- **Integrity**

To express what we mean, to deliver what we promise and to stand for what is lawful.

- **Respect**

To treat one another with dignity and fairness, appreciating the diversity of our workforce and the uniqueness of each employee.

- **Trust**

To build confidence through open and frank communication.

- **Honesty**

To be truthful in all our endeavors, to be honest and straightforward with one another and with our policy makers, service providers and stakeholders of the agri-food sector.

### Principle One – Governance Structure

- **Corporate Profile**

This section outlines, inter-alia, the corporate governance structures in place at the FAREI and describes the organisation of the Board's business.

The roles, responsibilities and duties of the Chairperson and Board members are set out at sections 7, 8 and 9 of the FAREI Act 2013.

The direction, control and accountability of the activities of the FAREI are vested in the Board, which is a unitary one. The fulfilling of these responsibilities is facilitated by a well-developed governance structure comprising various Sub-Committees of the Board.

The management is accountable and subject to the control of the Board and operates within the policy framework laid down by the latter.

The FAREI's business is conducted in accordance with the FAREI Act 2013, other relevant statutory provisions and the principles of good corporate governance. All functions are exercised honestly, in good faith with due care and diligence and in the interest of the FAREI and its stakeholders.

The FAREI Board is committed to fulfilling its mandate in a manner which is consistent with good governance practices, and in particular with regard to accountability, transparency, responsibility and ethics.

A Charter for the FAREI Board and its Sub-Committees is being prepared and will define:

- The terms of reference of the FAREI Board and its Sub-Committees;
- The composition and role of the Board of Directors; and
- The general duties of the Board of Directors.

The Charter will also include a Code of Conduct for the Board of Directors.

### Functions of the Board

- The Board gives strategic directions to the Institute;
- The Board formulates plans and policies in the non-sugar agricultural sector; and
- The Board takes strategic decisions on research priorities and extension activities in the non-sugar agricultural sector.

The Board assumes its fiduciary responsibilities whilst complying with all legal and regulatory requirements. In this respect, the Board adheres to the following key governance documents:

- Role, powers and functions of the Board as per the FAREI Act 2013;
- Terms of reference of the Board's Sub-Committees; and
- Code of Ethics for Employees.

Copies of the FAREI Act 2013 and the National Code of Corporate Governance for Mauritius 2016 have been handed over to the Chairperson and Board members to draw their attention on their respective roles, responsibilities and duties.

### Key Governance Positions

The Board acknowledges that it should lead and control the organisation and be collectively responsible for its long-term success, reputation and governance. In so doing, the Board assumes responsibility for meeting all regulatory and legal requirements.

The Board considers key governance positions to be critical to the delivery of its strategy and to achieve a high standard of good governance.

The Board ensures that proper standards of Corporate Governance are applied and maintained throughout the FAREI.

The following key governance positions are critical in enabling the Board to fulfil its mission, vision and objectives:

### Chairperson of the FAREI Board

- i. The Chairperson is non-executive and is appointed by the Minister of Agro-Industry and Food Security in accordance with section 7(1)(a) of the FAREI Act 2013.
- ii. The Chairperson is responsible for the conduct of the business and activities of the Board and its sub-committees; and
- iii. The Chairperson ensures the active participation of all board members in the discussions and deliberations of the Board.

### Chief Executive Officer

As per section 10 of the FAREI Act 2013, the Chief Executive Officer, who is the Head of the FAREI is, inter-alia, responsible for the execution of the policy of the Board and for the control and management of the day-to-day business of the Institute.

The Chief Executive Officer shall, in the exercise of his functions, act in accordance with such directives as he may receive from the Board. The Chief Executive Officer also advises on:

- i. the formulation and implementation of the research and extension activities in line with government's vision; and
- ii. the formulation, implementation and enforcement of appropriate legislation in line with government's policies.

Chief Executive Officer is the main point of contact between the Board and the management of FAREI.

### Chairpersons of Sub-Committees of the Board

The Chairpersons of the Sub-Committees work in close collaboration with and provide support and advice to the Chairperson of the Board and the Board itself.

- Mrs S Soborun is the Chairperson of the Finance and Staff Committees;
- Mr M Rughoo is the Chairperson of the Strategic and Monitoring Committee; and
- Mr S Naidu is the Chairperson of the Audit and Corporate Governance Committee.

### Board Secretary

The role of the Board Secretary is to ensure that the Board Members have the proper advice and resources for performing their duties under the relevant legal frameworks. The Board Secretary is also responsible for the organisation and coordination of the Board and Committee meetings and to ensure that the records and minutes of Board meetings reflect the proper exercise of those duties.

### Management Team

Management is accountable and subject to the control of the Board and operates within the policy framework laid down by the latter.

The Management team comprises the Chief Executive Officer, the Assistant Directors and Heads of Sections of FAREI.

The Management team assists the Chief Executive Officer in implementing the policy decisions of the Board.

### Professional Services

Auditors: The Audit of the financial statements of the FAREI is carried out by the National Audit Office

Bank: The State Bank of Mauritius Ltd

Legal Adviser: The State Law Office

### Principle Two – The Structure of the Board and its Sub-Committees

In accordance with the FAREI Act 2013, the Board is constituted of a chairperson and other members from diverse backgrounds with a view to ensuring a right balance of skills, experience and diversity. The Independent members provide a blend of knowledge and commitment to make sound judgments on various key issues relevant to the business of the FAREI.

The composition of the Board of FAREI for the period 01 July 2023 to 30 June 2024 was as follows:

	Remarks
<b>Chairperson</b>	
Mr Hemraj Woodun	Appointed by the Minister
<b>Members</b>	
Mrs Soondaree Soborun	Representative of Ministry of Agro-Industry and Food Security
Mrs Jacqueline Sauzier	Representative of Mauritius Chamber of Agriculture
Mr Rajdeo Kissoonah	Representative of Mauritius Agricultural and Marketing Cooperative Federation
Assoc Prof Daneshwar Puchooa	Representative of University of Mauritius
Mr Sandrasagarren Naidu	Appointed by Minister
Mr Mukesh Rughoo	Appointed by Minister
Mr Kalyandutt Seechurn	Appointed by Minister
Mr Lavine Mungry	Appointed by Minister
Mrs M Seenevassen Pillay	Acting Chief Executive Officer (from 01 June 2023 to 03 June 2024)
Dr (Mrs) A D Dookun-Saumtally	Chief Executive Officer, FAREI (as from 04 June 2024)
Mrs S Auguste	Administrative Manager - Board Secretary

### Profile of Board Members

The profiles of the Board Members are given hereunder. None of the Board Members had any interest in the affairs of the FAREI for the period under review.

#### Chairperson

##### Mr Hemraj Woodun

Mr H Woodun is a Sole Trader and Company Director and has wide experience in the agricultural sector. He is presently Chairperson of the FAREI Board.

## Board Members

### Mrs Soondaree D Soborun

Mrs Soondaree Devi Soborun, holds a Master's degree in Public Sector Management in addition to a Bachelor's Degree in Economics and a Post Graduate Certificate in Quality Management and Performance Excellence. She has wide experience in the public sector in various fields such as shipping, broadcasting and general administration.

In the last 20 years, she has served at the Prime Minister's Office, the Ministry of Civil Service and Administration Reforms, Ministry of Environment and Sustainable Development and the Ministry of Public Infrastructure and Transport.

Mrs Soborun is presently Deputy Permanent Secretary at the Ministry of Agro-Industry and Food Security.

### Mrs Jacqueline Sauzier, CSK

Mrs Jacqueline Sauzier is the General Secretary of the Mauritius Chamber of Agriculture. She plays an active role in safeguarding the interests of all the sugar producer's community while actively promoting the development of a sustainable agricultural and renewable energy sector. She acts as a link between the stakeholders of the agro industry community and keeps a strong public-private dialogue for a smooth implementation of objectives and actions of both parties.

Mrs Sauzier acts as a director on several boards and councils of parastatal bodies such as the AMB and the Advisory Council of the MCIA. She is also active on private boards, one of which, the Council of Business Mauritius, apex body of the private sector.

### Mr Mukesh Rughoo

Mr Mukesh Rughoo, holds a Master's degree in Genetics and Plant Breeding from the University of Aberystwyth, Wales and a Bachelor's degree in Agriculture from the University of Mauritius. Mr Rughoo has more than 35 years' experience in research and development of crops of strategic importance such as sugar cane, potato, tomato, maize, pulses, onion, garlic, wheat, rice and other crops.

### Mr Rajdeo Kissonah

Mr Rajdeo Kissonah is presently the Secretary/ Manager of the Mauritius Agricultural and Marketing Cooperative Federation Ltd. He is also the Vice President of the Mauritius Cooperative Alliance Ltd, Board Director of Belle Mare Water Users Multi-Purpose Cooperative Society Ltd and Board member of the Advisory Board of the Ministry of Business, Enterprise and Cooperatives.

### Mr Kalyandutt Seechurn

Mr Kalyandutt Seechurn holds a School Certificate and has a wide experience in the agricultural sector.

### Mr Sandrasagarren Naidu

Mr Sandrasagarren Naidu is a Freelance Consultant and a Trainer (MQA approved). His areas of expertise are as follows:

- Management of agricultural research and extension
- Statistics and agricultural surveys
- Capacity building of Non-State Actors/civil society organisations
- Poverty alleviation programmes

Mr Naidu holds a Master's degree in Biometry, University of Reading, UK (1976) a Bachelor's degree in Agriculture, University of Mauritius (1973) and a Diploma in Agricultural Surveys and Censuses, USDA (1981).

#### Mr Lavine Mungry

Mr L Mungry holds a School Certificate and has a wide experience in the agricultural sector. He is the Secretary of the Agricultural Development Marketing Association (ADMA) in Glen Park, Vacoas. He is a member of the National Potato Committee, National Onion and Garlic Committee.

#### Associate Professor Daneshwar Puchoo

Associate Professor Daneshwar Puchoo is the Dean at the Faculty of Agriculture, University of Mauritius. He joined the University of Mauritius in 1990 as a lecturer in Biotechnology and initiated the setting-up of the Tissue Culture Lab. and the Molecular Biology Lab. at the Faculty of Agriculture. He holds an undergraduate degree from the University of North London in Biology and Chemistry and post-graduate degrees in Applied Molecular Biology and Biotechnology from the University of London, Plant Biotechnology and Teaching & Learning in Higher Education from the University of Mauritius and in Biosafety from the University of Ghent, Belgium. Assoc. Prof. D Puchoo is highly engaged in research and is at present supervising five MPhil/PhD students. He is also the author of several chapters in books and has published over 50 peer-reviewed research papers in International Journals.

#### Sub-Committees

Four Board Sub-committees have been set up to assist the Board in the discharge of its duties and responsibilities. Each sub-committee operates under defined terms of reference and recommends specific matters to the Board. The Sub-committees of the FAREI Board for the period 01 July 2023 to 30 June 2024 were as follows:

1. Finance Committee;
2. Staff Committee;
3. Strategic and Monitoring Committee; and
4. Audit and Corporate Governance Committee.

#### Finance Committee (FC)

##### Composition of the FC and its functions

Mrs S Soborun	<b>Chairperson</b>
Mr M Rughoo	Member
Mr L Mungry	Member
Mr R Kisoona	Member
Ms A Dunpath, Administrative Manager	Secretary

#### In Attendance

Mrs M Seenevassen Pillay	Acting Chief Executive Officer
Mrs B Radha	Manager Finance
Mrs S Auguste	Administrative Manager
Mrs V Hardowar	Stores Superintendent

The Finance Committee reviews and recommends to the Board matters pertaining to the financial situation of the FAREI, financial statements and reports, budget estimates, Departmental Bid Committee and Bid Evaluation reports, Procurement status and award of contracts.

Five meetings of the Finance Committee were held during the period 01 July 2023 to 30 June 2024.

#### Staff Committee (SC)

##### Composition of the SC and its functions:

Mrs S Soborun	<b>Chairperson</b>
Assoc Prof D Puchooa	Member
Mr R Kissoonah	Member (from 01 July 2023 to 16 April 2024)
Mr K Seechurn	Member
Mrs J Sauzier	Member (as from 17 April 2024)
Ms A Dunpath, Administrative Manager	Secretary

#### In Attendance

Mrs M Seenevassen Pillay	Acting Chief Executive Officer
Mr A Seebocus	Human Resource Manager

The Staff Committee examines and recommends to the Board matters relating to, inter-alia:

- Human Resource Strategies;
- Interviews, Selection and Appointment;
- Training and Development; and
- Industrial matters.

There were nine meetings of the Staff Committee during the period 01 July 2023 to 30 June 2024.

#### Strategic and Monitoring Committee (SMC)

##### The composition of the SMC was as follows:

Mr M Rughoo	<b>Chairperson</b>
Assoc Prof D Puchooa	Member
Mr S Naidu	Member
Mrs J Sauzier	Member
Ms A Dunpath, Administrative Manager	Secretary

#### In Attendance

Mrs M Seenevassen Pillay	Acting Chief Executive Officer
Mr A Goolaub	Assistant Director (Extension and Training)
Dr (Mrs) L Unmole	Assistant Director (Crop Department)

### Terms of Reference of the SMC

The SMC shall inter-alia, focus on:

- Aligning with the strategic policy;
- Reviewing the performance and considering proposals regarding effectiveness and sustainability through Departmental review for crop, livestock and extension and training to farmers;
- Looking at the macro level issues and the FAREI's future in the medium term;
- Introducing, developing and promoting novel technologies in the food and non-sugar agricultural sector within a sustainable framework. To keep pace with the change, officers be given the opportunity to have access to new technologies (computer networking etc);
- Reflecting on FAREI's weaknesses, allocation of more resources in terms of recruitment and equipment, quality of reporting etc;
- Ensuring synergy among stakeholders;
- Preparing succession planning; and
- Addressing budgetary constraints to be able to unfold the strategic plan of action towards the farming community and avoiding departure from procedures.

There were nine meetings of the Strategic and Monitoring Committee (SMC) during the period 01 July 2023 to 30 June 2024.

### Audit and Corporate Governance Committee (ACGC)

#### Composition of the ACGC

Mr S Naidu	<b>Chairperson</b>
Mrs J Sauzier	Member
Mr K Seechurn	Member
Assoc Prof D Puchooa	Member
Ms A Dunputh, Administrative Manager	Secretary

#### In Attendance

Internal Auditor, FAREI	Post vacant since May 2023
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#### The Terms of Reference of the ACGC are inter-alia to focus on:

- The functioning and monitoring of the Internal Audit system to improve efficiency;
- Compliance with rules and regulations;
- Reviewing significant accounting and reporting issues to understand their impact on the financial statements;
- Encouraging consultation between internal and external auditors; and
- Assessing the adequacy and effectiveness of the organisation's governance, risk management, control frameworks, legislative and regulatory compliance.

Two meetings of the Audit and Corporate Governance Committee were held from 1 July 2023 to 30 June 2024.

### Anti-Corruption Committee

The FAREI in collaboration with the FCC (ex-ICAC), has implemented an Anti-Corruption Framework to detect and prevent fraud and corruption in the Public Sector. An Anti-Corruption Committee, comprising staff from various grades, has thus been set up at FAREI.

The Anti-Corruption Policy of FAREI, which was approved by the Board, is published on FAREI's website. A Corruption Risk Identification exercise was carried out by a sub-committee at FAREI in collaboration with the FCC. Corruption Risk Assessments were carried out in the following areas:

- i. Overtime allocation to Stockmen, Gardener/Nursery Attendants and Irrigation/ Pump Operators;
- ii. Sale of animals by FAREI; and
- iii. Sale of manure.

As at January 2023, FAREI had successfully completed the Key Performance Indicator on good governance. Corruption Risk Identification exercises would be carried out in other areas such as procurement, HR section, payment of overtime.

### Principle Three – Appointment of Members

Section 7 of the FAREI Act 2013 provides for the Institute to be administered by a Board consisting of:

- A Chairperson to be appointed by the Minister;
- A representative of the Ministry;
- A representative of the Mauritius Chamber of Agriculture;
- A representative of the Mauritius Agricultural Marketing Cooperative Federation;
- A representative of the University of Mauritius; and
- 4 persons with wide experience in food and non-sugar agricultural sector, to be appointed by the Minister.

### Principle Four – Remuneration, Duties and Performance of Members

Board members are aware of their legal duties which they are called upon to perform in accordance with ethical standards. Conflicts of interest are disclosed and managed. Management submits to the Board and its Sub-Committees well documented and concise reports and papers in a timely manner to allow Board members to perform their duties with due care, diligence and in a professional manner.

### Attendance records, remuneration and benefits of members

#### Remuneration Philosophy

During the period under review, the Chairperson and Board members were paid fees in accordance with the recommendations of the PRB report 2021 and Circular Note no 54 of 2022 from the Ministry of Public Service, Administrative and Institutional Reforms.

The remuneration of the Chairperson for the period 01 July 2023 to 30 June 2024 amounted to MUR 496,125.00. Board members namely Mrs S Soboron, Assoc Prof D Puchooa, Mr S Naidu, Mrs J Sauzier, Mr K Seechurn, Mr M Rughoo, Mr R Kissonah and Mr L Mungru were paid fees and travelling for a total amount of MUR 459,750 for the period 01 July 2023 to 30 June 2024.

Total number of Board meetings held from 01 July 2023 to 30 June 2024 was eleven.

Name	Board meetings attended
Mr H Woodun	11/11
Mrs S D Soborun	11/11
Mrs J Sauzier	8/11
Mr R Kissoonah	10/11
Dr D Puchooa	10/11
Mr S Naidu	11/11
Mr M Rughoo	8/11
Mr K Seechurn	10/11
Mr L Mungry	11/11

Name	Fees (MUR)							Total
	FAREI Boar	Telephone Allowance	FC	SC	SMC	ACGC	Travelling	
<b>Chairperson</b>								
Mr H Woodun	480,000	12,000					4,125	496,125
<b>Members</b>								
Mrs S D Soborun	27,500		13,000	20,800			7,875	69,175
Mr S Naidu	27,500				18,900	5,200	8,250	59,850
Mr M Rughoo	20,000		8,400		23,400		7,500	59,300
Mrs J Sauzier	20,000				8,400	2,100	4,875	35,375
Mr K Seechurn	25,000			18,900		4,200	7,875	55,975
*Mrs A Pompon					2,100		375	2,475
Mr D Puchooa	25,000			14,700	16,800	4,200	9,750	70,450
Mr L Mungry	27,500		8,400				5,625	41,525
Mr R Kissoonah	25,000		10,500	16,800			8,250	60,550
**Mrs K.Jugroo				2,600				2,600
*Mrs N Theeroovengadam					2,100		375.00	2,475
<b>Total</b>	<b>677,500</b>	<b>12,000</b>	<b>40,300</b>	<b>73,800</b>	<b>71,700</b>	<b>15,700</b>	<b>64,875</b>	<b>955,875</b>

\* Alternate Member: Representing the Mauritius Chamber of Agriculture on the Strategic and Monitoring Committee

\*\* Alternate Member: Representing the Ministry of Agro Industry and Food Security on FAREI Board

Name	Sub- Committees			
	FC	SC	SMC	ACGC
<b>Chairperson</b>				
Mr H Woodun	Nil	Nil	Nil	Nil
<b>Members</b>				
Mrs S D Soborun	5/5	8/9	Nil	Nil
Mr S Naidu	Nil	Nil	9/9	2/2
Mr M Rughoo	4/5	Nil	9/9	Nil
Mrs J Sauzier	Nil	Nil	4/9	1/2
Mr K Seechurn	Nil	9/9	Nil	2/2
Mrs A Pompon *	Nil	Nil	1/9	Nil
Mr D Puchooa	Nil	7/9	8/9	2/2
Mr L Mungry	4/5	Nil	Nil	Nil
Mr R Kissonah	5/5	8/9	Nil	Nil
Mrs K.Jugroo**	Nil	1/9	Nil	Nil
Mrs N Theeroovengadum*	Nil	Nil	1/9	Nil

Note: Finance Committee: FC; Staff Committee: SC; Strategic and Monitoring Committee: SMC; Audit and Corporate Governance Committee: ACGC.

\*Alternate Member: Representing the Mauritius Chamber of Agriculture on the Strategic and Monitoring Committee

\*\* Alternate Member: Representing the Ministry of Agro Industry and Food Security on the FAREI Board

### Legal Duties

All members of the Board including an alternate member are informed of their fiduciary duties at the time of their appointment.

### Code of Ethics

The Code of Ethics for FAREI employees rests on a number of core values which require that FAREI employees behave with integrity, selflessness, impartiality, objectivity, accountability, honesty and justice.

The three guiding principles of the code are that FAREI employees shall:

- i. Fulfill their lawful obligations to FAREI with professionalism, integrity and loyalty;
- ii. Perform their official duties honestly, faithfully and efficiently while respecting the rights of the public and their colleagues; and
- iii. Not to bring the FAREI into disrepute through their private activities.

Board members are also apprised of the requirements of their Code of Ethics.

### Conflict of Interest

Board members are requested to disclose any interest in writing in matters referred to the Board for approval. They are also required to disclose any Related Party Transaction. A Register of Interest has also been introduced.

### Related Party Transactions

The particulars in respect of Related Party Transactions have been disclosed in the notes of the Financial Statements.

### Principle Five – Risk Governance and Internal Control

The Board considers risk management as an integral component of good business practice with a view to support management’s decision making, improve the reliability of business performance and assist in the preparation of the Financial Statements in accordance with IPSAS.

The objective of risk management is not to eliminate risks altogether but to mitigate them to a minimum acceptable level in line with the objectives of the FAREI. The Board is responsible for the overall risk management and internal control systems. The organisation’s risk management process and internal control systems have been delegated to the ACGC for close monitoring of these aspects. Reports are presented by the Internal Auditor/Senior Internal Auditor to the ACGC on a quarterly basis for discussion and important matters are reported to the Board.

The Internal Audit section of FAREI is responsible for providing assurance to the Board with regard to the implementation, operation and effectiveness of internal controls in place at the organisation and risk management. Internal Audit reports are taken up at the level of the ACGC which in turn submits regular reports to the Board on the effectiveness of the internal audit systems and procedures at FAREI.

### Internal Control

Management is responsible for establishing an effective internal control environment, including adequate internal financial controls. In addition, operational control systems are developed and maintained on an on-going basis to provide reasonable assurance to the Board regarding:

- The integrity and reliability of the financial statements;
- The safeguarding of FAREI’s assets;
- The economic and efficient use of resources;
- The verification of the accomplishment of established goals and objectives;
- The detection and minimization of fraud, potential liability, loss and material misstatement; and
- Compliance with applicable legislations and regulations.

The ACGC monitors and evaluates the duties and responsibilities of management and of the Internal and External Auditors to ensure that all major issues reported have been satisfactorily resolved. The ACGC reports important matters to the Board.

### Principle Six – Reporting with Integrity

A fair, balanced and understandable assessment of the FAREI’s financial, environmental, social and governance positions, performance and outlook have been presented in this Annual Report.

The FAREI’s core values include service excellence to the farming community, customer care, teamwork, empowering its human resources for quality service delivery to the stakeholders of the Agri-Business sector.

#### Submission of Annual Report

The Annual Report, incorporating the financial statements of FAREI, is prepared in accordance with the IPSAS and submitted to the NAO within the prescribed submission date after being approved by the Board.

The Audited Annual Report of FAREI is posted on its website. Copies of the Audited Annual Report of FAREI are submitted to the Parent Ministry for tabling at the National Assembly as per statutory requirements.

#### Financial Capital

The revenue of the Institute consists mainly of:

- i. Government grants;
- ii. Special government funding for specific projects; and
- iii. External aid funding for specific projects.

These funds are used to meet FAREI’s objectives and functions and on a broader scale to contribute to the growth of the Agri-Business sector.

#### Human Capital

Human capital is an asset of the Institute as the skills, knowledge, qualifications and experience of its people are vital for the success of the FAREI.

The Board acknowledges that organisational objectives can only be achieved through its employees. Accordingly, a lot of emphasis is placed on the human capital by providing a healthy and safe working environment and adopting an equitable and fair approach towards employees’ remuneration and benefits.

#### Intellectual Capital

The FAREI continuously invests in technology solutions and IT tools to help manage documents, facilitate knowledge sharing, improve delivery of service to the farming community and to safeguard customer and corporate data.

Management considers that ICT can be harnessed as an essential tool towards bringing service innovations to the stakeholders of the FAREI. In this context, FAREI has embarked in the digitalization of its operations with the objective of bringing quality service to its stakeholders.

- Research and Extension Key Information Repository System (REKIR)

The FAREI has started implementing the REKIR system and has achieved a completion rate of 97%.

- TaMIS (HR/Payroll System)

TaMIS is an HR and Payroll management platform currently being piloted at the Head Office of FAREI.

This innovative system is designed to streamline various HR functions, effectively managing employee data from recruitment to retirement.

- Farmer Information Delivery System (FIDS)

The objective of the FIDS is to enhance communication between FAREI and farmers by providing timely information related to agricultural practices, market trends, weather updates and available resources.

#### Safety and Health Policy Statement

The FAREI complies with the Occupational Safety and Health Act (OSHA 2005) and other regulations and legislations regarding safety and health issues. Policies and procedures have been established and updated in this respect for continuous improvement in this field.

FAREI's Safety and Health Committee, established as per the OSHA, meets regularly in the presence of Unions to oversee occupational safety and health matters throughout the organisation.

#### Political and Charitable Donations

The FAREI's activities and projects are financed by the Ministry of Agro-Industry and Food Security. During the period under review, no political or charitable donations were made.

#### Transparency, Accountability and Integrity

To ensure maximum transparency within the organisation, clear sets of internal procedures have been devised to eliminate the risks of fraud, errors and corruption. All internal and external circulars are sent by e-mail to ensure that all employees of FAREI are duly aware and updated.

Well established and comprehensive procedures have been formulated by the Anti-Corruption Committee of FAREI in its Anti- Corruption Policy which is displayed on FAREI's website.

#### Environmental Issues

Sustainable development and environmental issues are taken into consideration in the design and implementation of projects and activities undertaken by FAREI.

#### Code of Ethics

The FAREI is committed to the highest standards of integrity and ethical conduct in dealing with all its stakeholders and staff at all levels. To this effect, a code of ethics has been developed and circulated among its staff. Procedures are in place to enable enforcement of the Code of Ethics.

#### Gender Policy Statement

The FAREI complies with all legislations and policies of government in the context of gender equality and empowerment. In this respect female employees are encouraged to participate in the decision-making processes and are empowered to take on higher responsibilities. Furthermore, recognizing the significant role of women in the agricultural sector, the FAREI, through its Women and Youth section, endeavours to empower women with various production and processing techniques as well as entrepreneurial skills to enable them to contribute in boosting up our food production and ensure food security, at the same time rendering them more independent and enabling them to contribute into the national economy.

The staffing position gender-wise as at 30 June 2024 was as follows:

Grades	Male	Female
Directorate, Scientific, Technical and Administrative Staff	115	129
Workmen's Group	253	40
Sub total	368	169
<b>Total</b>	<b>537</b>	

### Equal Opportunity Policy

The FAREI is an equal opportunity employer and employment is based solely upon merit. As stipulated in its code of ethics, FAREI is committed to maintain a supportive work environment where all employees can reach their full potential. Furthermore, it is ensured that all employees work in a safe environment, free of threats, intimidation and physical harm. FAREI is committed towards its fundamental values for respect of human rights and does not discriminate against any person on the basis of his race, gender, disability, religious belief, age and sexual orientation.

FAREI ensures equal access of all employees to promotions and job enrichment opportunities within the organisation. Employees are encouraged to follow courses for a better understanding of the work processes. Around 31% of FAREI's employees are female and it is the Institute's aim to increase that number in time at all levels of the organisation.

### Principle Seven – Audit

#### Internal Audit

The role of the Internal Audit is to provide independent and objective assurance on internal control and risks to Management and the Board of Directors through the ACGC. By following a systematic and disciplined approach, the Internal Audit section helps to accomplish the organisation's objectives by evaluating and recommending improvements to operations, internal controls, risk management systems and the governance process.

The FAREI has an Internal Audit function which has the overall responsibility of providing independent and objective assurance designed to add value and improve the organisation's operations. The scope of work of the Internal Audit is to enable the organisation to accomplish its objectives by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of its risk management, control, information systems and governance processes.

The Internal Auditor reports administratively to the Chief Executive Officer and functionally to the ACGC. This reporting structure allows the Internal Auditor to remain independent and to report all items of significance to the ACGC. The Internal Auditor has unrestricted access to review all activities and transactions undertaken by the organisation and to appraise and report thereon. There are no restrictions placed over the right of access of the Internal Auditor to records, documents and files kept by FAREI.

The Scope of Work of the Internal Audit function comprises:

- An assessment of financial and operating information and the means used to initiate, authorize, record, process and report such information to validate the reliability and integrity of the process;

- Ascertaining the extent of compliance with good internal accounting controls, established policies and procedures, laws and regulations;
- Reviewing the means to safeguard assets as well as the adequacy and effectiveness of applicable policies and practices;
- Appraising the economy and efficiency with which processes are executed and resources are employed;
- Reviewing operations and programs to ascertain whether results are consistent with established objectives; and
- Carrying out special assignments as directed by the Audit and Corporate Governance Committee.

At the beginning of each financial year, the Internal Auditor has to submit to the Audit and Corporate Governance Committee an Audit Plan for the period concerned for Board's approval. The Internal Auditor/Senior Internal Auditor resigned on 01 September 2023 and action is being taken to fill the vacant posts of Internal Auditor/Senior Internal Auditor and Internal Control Officer/Senior Internal Control Officer.

#### External Audit

The External Auditor of the FAREI is the National Audit Office and its Auditors are rotated every three years. The Audit and Corporate Governance Committee reviews the management letters and reports of the Director of Audit on the financial statements of the FAREI for corrective measures by management as appropriate.

#### Principle Eight – Relations with Stakeholders

The FAREI is mandated to carry out farmer oriented applied research for development and to support the farming community for non-sugar crop and livestock production through its Extension Service. With a pool of professionals, it is also responsible for implementing Government policies, dissemination of new technologies and revenue generation for farmers as priority. The organisation also ensures that farmers and agro-entrepreneurs including agro-processors are empowered to maintain food crop production round the year to have a constant supply on the local market and to reduce imports as far as possible.

#### FAREI's Key Stakeholders

Open lines of communication are maintained to ensure transparency and optimal disclosure of information. Apart from official press communiqués and postings on FAREI's website, regular meetings are held with FAREI's Key Stakeholders to keep them informed of the various activities carried out by the FAREI. The Chairperson and Board members are also invited to attend these meetings.

#### Employees

The FAREI maintains constant dialogue with its employees. Employees are unionized and Management keeps an open communication channel with the FAREI Unions. The training needs of employees are assessed on a regular basis and addressed in a transparent manner.

#### Customers

The FAREI places its customers at the centre of its activities by providing high quality and innovative service delivery. FAREI operates in different locations through its Model Farms, Demonstration Centres, Research

Stations and Extension sub-offices to provide research, advisory and extension services to the farming community.

The FAREI ensures that its staff members possess the necessary skills, experience and knowledge to better serve its customers with professional advice and timely service delivery while abiding with all relevant legislations, rules and regulations.

### Suppliers

In its dealings with suppliers of goods, works and services, the FAREI ensures that ethical standards are applied consistently to ensure that value for money goods, works and services are procured for the organisation in the most efficient way.

### Parent Ministry

The FAREI maintained its collaboration with the Ministry of Agro Industry and Food Security in the implementation and monitoring of government projects and schemes to enable farmers to improve their production and productivity. The FAREI has been actively involved in facilitating the implementation of several schemes announced by the Government such as: Sheltered Farming, Rain-Water Harvesting, Purchase of Agricultural/ Processing Equipment (Crop), Purchase of Equipment (Livestock), CCTV Camera, Upgrading of Livestock Farm and Cattle Breeding. Field visits were carried out to monitor these schemes.

### Agricultural Marketing Board (AMB)

FAREI is the certification body for the local seeds marketed by the Agricultural Marketing Board. Assessment and follow up on the local harvest of potatoes, onions and garlic are also carried out by FAREI.

### Financial Partners

Communication with Financial Institutions and the financial community in general is actively pursued and usually takes place through meetings and presentations. The Annual Report of the FAREI is posted on its website.

### Other Stakeholders

The FAREI acted as an interface with other stakeholders such as the Development Bank of Mauritius, the Division of Veterinary Services for the Livestock Feed Promotion Scheme, the Small Farmers Welfare Fund and the MOESWM&CC with respect to loan requests, veterinary services, subsidized livestock feed, farmer's card and environment issues respectively.

### Statement of Directors' Responsibility

The FAREI acknowledges its responsibilities for:

- Adequate accounting records and maintenance of effective internal control systems;
- The preparation of financial statements which fairly present the state of affairs of the Institute as at the end of the financial year and the results of its operations and cash flows for that period and which comply with International Public Sector Accounting Standards (IPSAS); and
- The selection of appropriate accounting policies supported by reasonable and prudent judgments.

The Director of Audit of the National Audit Office is responsible for reporting on whether the financial statements are fairly presented.

The Board of Directors reports that:

- Adequate accounting records and an effective system of internal control have been maintained;
- Appropriate accounting policies supported by reasonable and prudent judgments and estimates have been used consistently;
- Applicable accounting standards have been adhered to; and
- The Code of Corporate Governance has been adhered to.

#### Directors' Statement for Internal Control

The FAREI acknowledges its responsibility for the setting up of adequate systems of Internal Control and for the setting up of appropriate policies to provide reasonable assurance that the control objectives have been attained. The activities of the Institute are closely monitored by the Board and its Sub-Committees. Procedures and policies are well documented and consistently applied. Management has the relevant experience and skills to ensure proper running of the Institute.

An effective system of Internal Control providing for the following has been implemented:

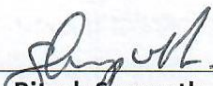
- Proper segregation of duties whereby the different functions in process are cross-checked and verified;
- Follow up and implementation of the recommendations of the Director of Audit by the divisions concerned in order to improve processes and to ensure proper accountability;
- Adequate supervision of duties is performed by staff members;
- The assets of the Institute are properly safeguarded;
- All cheques issued by the Institute are signed by two authorized signatories; and
- Compliance with relevant laws, rules and regulations.

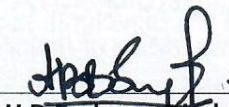
#### Statement of Compliance

Name of PIE: Food and Agricultural Research and Extension Institute (FAREI)

Reporting Period: 01 July 2023 to 30 June 2024

We, the Directors of the Food and Agricultural Research and Extension Institute, confirm to the best of our knowledge that the Institute has complied with all of its obligations and requirements under the Code of Corporate Governance.

  
Ritesh Sumputh  
Chairperson

  
H D Bedacee Dindoyal (Mrs)  
Board Member

## Section 4: Achievements of Key Performance Indicators

Action	Indicators	Achievements		Projected Achievements		
		2022-2023	2023-2024	2024-2025	2025-2026	2026-2027
Introduction of new crop varieties	Number of varieties introduced and tested	200	168	205	176	162
Development of new crop varieties	Number of varieties developed	1	1	1	2	3
Develop new technologies	Number of new technologies introduced for evaluation	8	5	6	5	4
New crops	Number of new crops under study	10	7	1	2	1
Pest and disease surveillance	Number of diagnostic cases attended for plant pests and diseases	747	741	800	900	900
Onion seed production	Kg seed production/year	2,445.4 kg	499.2 kg <sup>1</sup>	100 kg	400 kg	600 kg
Plant Tissue Culture	Number of protocols fine-tuned for new crop species or varieties	1	1	1	1	1
	Quantity of potato seeds (minitubers) produced (for Vigora, Everest, Spunta and other clones being tested)	319 kg	131 kg <sup>2</sup>	262 kg	500 kg	600 kg
	Quantity of planting material supplied	5,859	10,429	7,000	10,000	10,000
Bio-farming	Land under bio-farming	103.7 ha	126.6 ha	140 ha	155 ha	165 ha
	Quantity of crop produced (t)	3,805 t	5,020 t	5,550 t	5,900 t	6,200 t
	Number of farmers trained under MauriGap Level 1	36	45	30	30	30
Training of farmers, visit and advisory services	Number of training carried out	483	355	400	400	400
	Number of farmers trained	5,220	4,544	5,000	5,000	5,000
	Number of visits and advisory services	24,625	21,333	23,000	23,000	23,000

Action	Indicators	Achievements		Projected Achievements		
		2022-2023	2023-2024	2024-2025	2025-2026	2026-2027
Breed performance assessment	Number of breed being assessed	5	5	5	5	5
Improve farming practices / technologies	Number of farming practices/ technologies improved	4	4	4	4	4
Feed / fodder evaluation	Number of feeds/ fodder evaluated	4	5	5	5	5

<sup>1</sup> Continuous heavy rainfall during the 2023 harvest led to mother bulbs that were unsuitable for seed production.

<sup>2</sup> Potato seed production was lower in 2023/2024 due to an unusually short winter season and abnormally high temperatures, with shade house temperatures reaching up to 32 °C.

The strategic direction for the next three years

1. Enhance national food security through introduction, development and promotion of new varieties/ breeds and novel technologies;
2. Enhance research and development activities for climate resilient agriculture;
3. Enhance training and entrepreneurship;
4. Digitalization operations and information dissemination;
5. Promote production of safe food through adoption of sustainable production practices; and
6. Promote value addition while minimizing post-harvest losses.

## Section 5: Technical Highlights

### Crop Research and Development

Activities in Crop Research focused on the development of new crop varieties through breeding, the introduction and evaluation of new improved germplasm, crop productivity and quality improvement, new crop production techniques, crop protection as well as the development of sustainable and climate-smart packages for crop production.

#### Field and Vegetable Crops

##### Potato

During the first potato season (May/June), five introduced potato varieties (Alverstone Russet, Brianna, Everest, El Mundo, and Quintera) were evaluated alongside the control variety Spunta at five locations. Everest demonstrated comparable or higher total tuber yields than Spunta at all sites, with a mean marketable tuber yield of 34.3 t/ha, outperforming Spunta (27.2 t/ha) and Alverstone Russet (26.7 t/ha). El Mundo, Quintera, and Brianna had lower yields, averaging 14.5 t/ha, 16.6 t/ha, and 16.8 t/ha, respectively. Spunta and Everest gave a significantly lower percentage of unmarketable tubers and produced larger average tuber weights, falling into the Grade A category, i.e. greater than 150 g. The other varieties yielded tubers in mixed grades ranging from 75 g to 150 g.

In the second potato planting season (July/August), variety Panamera was evaluated alongside control varieties Mondial and Spunta. Panamera achieved a mean total tuber yield of 36.7 t/ha, which was significantly higher than Mondial (28.5 t/ha) and better than Spunta (30.8 t/ha). The mean marketable tuber yield for Panamera was 28.2 t/ha and was comparable to Spunta (25.5 t/ha) and Mondial (24.5 t/ha), despite soft rot disease (*Pectobacterium* spp.) affecting yields at Cote D'or. Panamera had a lower average tuber weight (110.6 g) compared to Mondial (126.7 g) and Spunta (139.0 g), resulting in a higher proportion of smaller tubers and a greater unmarketable yield (8.1 t/ha) compared to Mondial (3.9 t/ha) and Spunta (4.7 t/ha). While Panamera showed high total tuber yield potential, further trials are needed to evaluate its commercial viability, particularly regarding tuber characteristics and susceptibility to soft rot.

The effect of four timings of haulm killing (64, 71, 78 and 85 days after planting-DAP) with herbicide glufosinate ammonium (Basta) at the rate of 1.0 L/ha on yield of seed and ware potato variety Spunta was compared to the normal haulm killing practice at 92 DAP. Haulm killing at 64 DAP was found to contribute to significantly higher seed potato yield (82.6%) compared to haulm killing at 78 DAP (68.4%), 85 DAP (53.9%) and 92 DAP (48.4 %). However, it resulted in a significantly lower total yield (20.3 t/ha) compared to haulm killing in other treatments (26.6 t/ha). Haulm killing at 71 and 78 DAP not only resulted in a significantly higher seed yield compared to that at 92 DAP, but also resulted in a total yield that was comparable to the latter. A large-scale trial will further be undertaken to validate the results as well as assessing the cost-effectiveness of haulm killing.

Late blight disease (*Phytophthora infestans*) resistance was evaluated in four advanced potato clones (142/161/5, 142/161/6, 29/5/10, 29/5/16) alongside commercial varieties Spunta and Everest at La Laura and Plaine Sophie.

The clones exhibited significantly lower disease severity (less than 1%) compared to both Spunta and Everest (50%) at 88 days after planting, confirming their resistance to the disease (Figure 1). Symptoms of the disease were recorded on varieties Everest and Spunta starting from 48-50 days whereas on the advanced clones, no visible symptoms were observed. In terms of marketable tuber yield, clone 142/161/4 outperformed the other varieties, yielding significantly higher yields (26.2 t/ha) at La Laura compared to Spunta (17.5 t/ha) and Everest (17.9 t/ha).

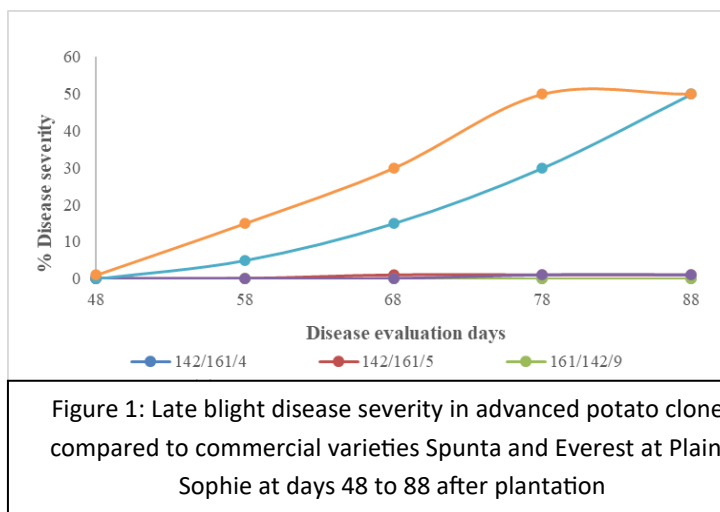


Figure 1: Late blight disease severity in advanced potato clones compared to commercial varieties Spunta and Everest at Plaine Sophie at days 48 to 88 after plantation

## Onion

Three hybrid onion varieties namely Amit F1 (red), Agrippa (yellow), and Ngwazi (yellow) were tested alongside the control varieties Rosada (red), Askari (yellow), and Francia (red) in growers' fields at four different sites at L'Esperance Trebuchet, Camp Fouquereaux, La Chaumiere, and La Marie as well as in one corporate field at St Antoine. Low marketable bulb yields were observed at L'Esperance Trebuchet due to herbicide drift. At Camp Fouquereaux, yields of Amit F1 were similar to the control varieties, while Francia had the highest yield at La Chaumiere. At La Marie, Amit F1 outperformed the control varieties in both total and marketable bulb yields. The hybrid varieties Amit F1, Ngwazi, and Agrippa showed average marketable yields of 8.3 to 34.1 t/ha, 7.2 to 27.7 t/ha, and 7.2 to 26.7 t/ha, respectively, which were comparable to the control varieties Francia, Rosada, and Askari, yielding 9.6 to 28.0 t/ha, 8.0 to 26.9 t/ha, and 9.6 to 35.2 t/ha, respectively. Further evaluation is planned for 2024.

The yield performance of five hybrid onion varieties namely Red Coach, ON 3350, Amit F1, ON 2386 (Agrippa), and Ngwazi was compared with control varieties Rosada, Askari, and Francia at Réduit. Hybrid varieties Amit F1, (23.5 t/ha) showed an average total bulb yields of 26.6 t/ha, while both ON 3350 and Ngwazi gave a yield of 23.5 t/ha. The control varieties Rosada and Askari gave a yield of 26.6 t/ha and 24.8 t/ha respectively. Amit F1 achieved the highest average marketable bulb yield of 24.0 t/ha, comparable to Francia, Rosada, and Askari (21.7 t/ha each). Red Coach had the lowest marketable bulb yield of 14.5 t/ha due to a high percentage of thick-necked bulbs (12.8%). The marketable yields of ON 3350 (20.8 t/ha), Ngwazi (20.1 t/ha), and Agrippa (19.6 t/ha) were similar to the control varieties. Amit F1, ON 3350, Ngwazi, and Agrippa are considered promising and will be further evaluated.

## Bean

The performance of four selected heat-tolerant bean pulse varieties namely AP 82, CHITEDZE 1, CHITEDZE 2, CHITEDZE 4 and one breeding line LTS7/06, along with varieties Red Pearl and Long Tom as control, was assessed at Réduit. The control variety Red Pearl was the earliest maturing variety which was reached at 80-85 days after plantation (DAP). Varieties CHITEDZE 1 and CHITEDZE 2, CHITEDZE 4, LTS7/06 and Long Tom were identified as mid-maturing, and dry pods were ready for harvest at 90-100 DAP. For AP 82, a semi-determinate growth habit was observed with late-maturing characteristics at 105-115 DAP. The dry seed yield of the different varieties ranged from 0.32-1.01 t/ha; AP 82 (1.01 t/ha) gave the highest yield followed by CHITEDZE 2 (0.8 t/ha) and CHITEDZE 4 (0.78 t/ha). A total of 5 kg of nucleus seed for the high-performing heat-tolerant varieties AP 82, CHITEDZE 2, and CHITEDZE 4 was produced.

The climbing bean variety Salamanca, evaluated under field conditions from October to November 2023, was found promising for backyard and commercial production. It reached harvest stage at 60 DAP, producing fine green pods of average length of 14 cm and width of 7.1 mm and yielded an average of 14.0 t/ha green pods under summer conditions. The variety was found promising in terms of yield and adaptability. Further evaluation alongside other climbing varieties is planned during the winter season.

The potential of growing broad bean in late winter months in the superhumid region to extend its growing season was evaluated at Wooton. The crop reached harvest maturity at 85 DAP and yielded 7.0 t/ha of good quality mature green pods with 3 to 4 seeds per pod. The yield of mature pod in the previous evaluation in late summer was low (4.5 t/ha). Based on observations over the past two years, it is concluded that broad bean can be successfully planted towards the end of the winter period to prolong the growing season. However, it is recommended to avoid sowing in early March, due to potential heavy rainfall, as observed in the last three years, that could result in significant crop damage.

Some 2.5 kg of seed of a big podded pigeon pea variety were bulked for both commercial and backyard cultivation at Réduit and Richelieu. The variety reached pod-maturing stage between 173 to 187 DAP and produced between 2.0 to 2.5 kg mature pods per plant, with an estimated yield of 6.7 to 8.3 t/ha at a planting density of 3330 plants. The variety produced abundant good quality pods of 5 to 8 cm in length and of width 1.3 to 1.6 cm with 5 to 8 seeds per pod at both sites, with a shelling percentage varying between 49 to 52. However, bird damage was a major constraint at both the sites.

The local winged bean variety was grown at Réduit and Wooton to produce a seed stock for both commercial and backyard purposes. The variety exhibited vigorous growth under the humid summer conditions at Réduit and reached 50% flowering around 80 DAP and immature pods stage around 100 DAP. An average of 4.99 kg of tender pods was produced by each plant, with an estimated yield of 16.6 t/ha at a plant density of 3330 plants/ha. The immature pods had a mean weight of 22.9 g, with an average length and width of 21.7 cm and 6.3 cm, respectively. At Wooton, under the super-humid conditions, the variety did not perform well due to a high infestation by the fungus *Sclerotinia sclerotiorum*. Approximately 2 kg of dry seeds were obtained for on-farm dissemination in 2024.

## Pea

Five F10 green pea breeding lines (LA8, LA9, LA51, LA77 and LA138) from a cross between the variety Local and Arcadia were evaluated at Réduit. All the breeding lines produced significantly higher green pod yield in the range of 3.3 to 4.5 t/ha compared to the parent variety Local which yielded 2.2 t/ha. Based on the yield potential, pod characteristics, and plant stature, all four breeding lines were selected for further evaluation.

## Sweet Potato

Three sweet potato varieties namely U11, Zapello and Patate Mauve, obtained from the Plant Genetic Resources of the Agricultural Services, were evaluated along with variety Little Leaf as control, at Réduit. No significant differences were observed amongst the varieties in the number of roots per plant, average yield per plant and estimated yield (t/ha). The estimated tuber yield recorded in the variety Little Leaf, U11, Patate Mauve and Zapello was 48.1 t/ha, 43.1t/ha, 33.3 t/ha and 31.4 t/ha respectively.

Variety U11 tubers, despite being large, exhibited surface defects and were deemed unappealing for the fresh market, contrasting with the visually appealing tubers of the other three varieties. The flesh colour varied: cream for Little Leaf, orange with light purple specks for U11, purple for Patate Mauve and light orange for Zapello (Figure 2). All four varieties were considered suitable for processing into crisps, flour, and fries and cuttings were disseminated to growers.



Figure 2. From left to right: Varieties Little leaf, U11, Patate Mauve and Zapello

## Quinoa

The performance of four promising quinoa accessions (P1510548, P1634919, P1596498 and P1596293) was evaluated at Richelieu. Variety P1596293 was highly susceptible to different fungal diseases and was discarded from the trial. For the remaining three varieties, only a limited number of panicles were harvested due to poor seed set. No significant difference in seed yield and panicle length was noted among the three accessions. Average seed yield per plant was low varying between 2.7 to 4.1 g (estimated yield of 0.3 to 0.4 t/ha). Over the past three years, high temperatures and heavy rainfall have adversely affected quinoa trials, resulting in fungal infection and poor seed yields. Bird damage is a major challenge to quinoa cultivation.

## Snap Bean

The yield potential and characteristics of eight advanced F9 snap bean breeding lines (LTA 1 to LTA 8), developed from crosses between Long Tom and Acacia, were evaluated at Richelieu and Réduit against control varieties FBS 1 and FBS 2. All lines, except LTA 2, produced significantly wider pods (9.8-12.1 mm) compared to FBS2 (8.2 mm). LTA 3 (12.1 mm) had significantly wider pods than FBS1 (10.7 mm). LTA 5 had the highest pod yield (16.1 t/ha), outperforming LTA 7, LTA 8, and FBS2 but was similar to LTA 1, LTA 2, LTA 3, LTA 4, LTA 6, and FBS1 (12.6-15.6 t/ha). At Richelieu, all lines yielded higher (14.4-18.7 t/ha) than FBS2 (13.3 t/ha) and were comparable to FBS1 (15.0 t/ha). Further trials are planned for 2024 to confirm these results.

The yield potential and characteristics of seven advanced F9 snap bean breeding lines (LTV 1 to LTV 7), developed from crosses between Long Tom and Vilbel, were evaluated against the imported snap bean variety Gouti and the local variety FBS1 at Réduit. Significant differences were observed in pod yield, number of pods per plant, pod length, and pod width. Pod yields ranged from 8.5 to 19.6 t/ha, with LTV 5 (19.6 t/ha), LTV 2 (18.2 t/ha), and LTV 3 (16.8 t/ha) showing comparable or superior yields to FBS1 (16.6 t/ha).

LTV 5 also produced the longest pods (17.7 cm), and LTV 6 had the highest number of pods per plant (54.6). The breeding lines varied in flower, pod, and seed characteristics, with round pods in LTV 1 and LTV 3, and flat pods in others. These lines demonstrated promising yields under summer conditions, with further evaluation planned for 2024.

## Peanut

Seed of six introduced peanut accessions namely ICGV 171174 (three-seeded); ICGV 10176 (rust and leaf spot resistant); ICGV 171181 (three-seeded); ICGV 171176 (small-seeded); ICGV 86699 (rust and leaf spot resistant); ICGV 06040 (heat-tolerant) were sown at Richelieu in April 2023 for seed multiplication. The marketable seed yield recorded for the accessions ICGV 171174, ICGV 171181, ICGV 171176, ICGV 86699, ICGV 06040 was 35.3, 18.1, 21.7, 63.8 and 144.0 g respectively. Seeds of varieties ICGV 171174, and ICGV 171176 were red while that of ICGV 86699 were dark red and ICGV 06040 were beige. Seeds of the accessions ICGV 86699, and ICGV06040 were relatively larger with 100 seed weight varying between 81.7 and 88.3 g compared to the other accessions with 100 seeds weight ranging from 55.0 to 58.3 g. A total of 4.5 kg of nuclear seed was produced for further multiplication and evaluation.

## Tomato

The performance of 14 hybrid tomato varieties namely MITO 1041, Miracle, Starlet, Ruby, Ryna, Anuskha, Ivy, BR 5911, Disha, HVTM 215, KSP 1430, KSP 1431, Sultan, and Cobra, along with two control varieties; Swaraksha and THN 988, was evaluated at Réduit and Richelieu. At Réduit, yields ranged from 5.3 t/ha (Ryna) to 14.5 t/ha (BR 5911). At Richelieu, Cobra had the highest yield (23.0 t/ha), though not significantly different from Swaraksha (20.3 t/ha) and THN 988 (19.5 t/ha). Yields for BR 5911, Ivy, KSP 1431, and Sultan were significantly lower than the control varieties. Significant differences in fruit length and width were observed at both sites. Varieties MITO 1041, Starlet, Miracle, Ruby, Anuskha, BR 5911, Sultan, and Cobra (Figure 3) showed promising yield and desirable fruit characteristics. These varieties will undergo further testing in 2024 before any recommendation is made to farmers.



Figure 3: Promising tomato varieties earmarked for further evaluation

The performance of eight introduced open-pollinated tomato varieties (CLN 3024 A, CLN 3212 C, CLN 3241Q, CLN 3736 D, CLN 4018 B, CLN 2498 D, CLN 3241-H-27 and CLN 3938 C) was evaluated along with two control varieties Swaraksha and THN 988 at Réduit and Richelieu. Due to poor germination, two varieties, CLN 3212 C and CLN 3241 H-27, were not included at Richelieu, while at Réduit CLN 3212 C was not evaluated. The highest fruit weight of 202.8 g was recorded in CLN 3938 C at Réduit. Line CLN 2498 D, named Jupiter (Figure 4) was highly appreciated by growers for its high yield potential (37.3 t/ha) and desirable fruit characteristics. It was released to the farming community in 2022. Lines CLN 3212 C, CLN 3241Q, CLN 3241 H-27, CLN 3736 D and CLN 4018 B have been retained for on-farm trials.



Figure 4: Variety Jupiter released in 2023

Evaluation of F4 generation crosses between tomato varieties Swaraksha and Calora, aiming to develop better-performing lines in terms of yield, fruit shape, color, and disease tolerance, was pursued at Réduit. Twenty-five progenies from the F3 generation were evaluated, and fifty-nine potential lines were selected. These lines exhibited semi-determinate to indeterminate growth with plant heights ranging from 57 to 110 cm. The yield per plant varied from 0.3 to 4.2 kg. Selected lines (Figure 5) will be further evaluated in the F5 generation.



Figure 5: Tomato fruits from lines from the F4 Generation

## Chilli

Nine chilli varieties namely Sizzler, KSP 1251, KSP1471, KSP 1470, KSP 1350, NS 203, AVPP 0514, APC 4 and KSP1472 were evaluated at Réduit alongside variety Indam 5 as control. Significant differences were observed among varieties for fruit weight, length, and width. Although no significant difference was observed in yield among the varieties, variety Sizzler gave the highest yield of 28.2 t/ha. Despite its high yield and long fruit length (18.8 cm), this variety is not considered promising due to its fruit shape and colour. However, it could be recommended for processing purposes.



Figure 6: Chilli variety Senturi, released in 2023

In 2023, line AVPP0514, named Senturi, (Figure 6) showing tolerance to anthracnose disease was released to the planting community. Promising varieties including KSP 1350, KSP 1471, KSP 1471, KSP 1470 and NS 203 will be recommended to growers.

A maintenance breeding program for the chilli variety APC 4 at Réduit aims to enhance plant vigour, fruit characteristics, yield, and disease tolerance. Out of 200 transplanted plants, 19 were selected and isolated to prevent outcrossing. Selected lines (Figure 7) showed average fruit weights from 7.2 to 12.6 g and lengths from 10.7 to 12.9 cm. These lines will undergo further evaluation.



Figure 7: Variety APC 4 (far left) and selected breeding lines (right)

## Chinese Cabbage

The performance of four introduced Chinese cabbage varieties, V1060 641, V1060 643, V1060 644, and V1060 646 were evaluated at Réduit. Although no significant difference was observed for the different parameters tested, variety V1060643 yielded the highest of 53.6 t/ha, followed by the control variety Pomme Type (47.3 t/ha) and V1060646 (47.1 t/ha). Head weights ranged from 1.3 to 1.4 kg while heights varied between 27.4 to 31.5 cm. Compactness ranged from 78.7 to 95.2 g/cm. All varieties will be replanted in 2024 for seed production to be sent to Barkly Experimental Station for multiplication and marketing.

## Chinese Broccoli (Kailaan)

The performance of two Kailaan (Chinese broccoli) varieties, AVLB 1201 and AVLB 1202, introduced from the World Vegetable Centre, (WVC), Taiwan was evaluated alongside three commercial varieties, NKL 01, KL02, and KL 01, at Réduit. The highest yield was recorded in variety KL 01 (4.1 t/ha), but it did not differ significantly from those of AVLB 1201 (3.2 t/ha) and NKL 01 (3.1 t/ha). Varieties NKL 01 and KL02 will be recommended in 2024, while a seed multiplication programme will be undertaken for varieties AVLB 1201 and AVLB 1202 before release.

The performance of two new cauliflower varieties, KAS 002 and KAS 004, was evaluated alongside NS 555, White Swan, Tropical Eleven, and a Local control variety at Réduit. NS 555 (20.4 t/ha) and White Swan (19.0

t/ha) recorded significantly higher yields than the control (9.7 t/ha) and KAS 004 (11.1 t/ha). KAS 004 matured in 45 days, while KAS 002 and Tropical Eleven matured in 50 days, compared to 60 days for the others. NS 555 (0.92 kg) and White Swan (0.85 kg) had the highest curd weights, with KAS 004 (0.50 kg) and the Local variety (0.43 kg) being the lowest. Compactness was comparable among NS 555, White Swan, KAS 002, and Tropical Eleven. The new varieties will be re-evaluated in 2024.

### Cabbage

The performance of seven cabbage varieties (Crystal Boy, Ditma, Futoski, Summer Power, Lunaria, Gloriosa, and Pride 004) was evaluated at Réduit, with Futoski (67.1 t/ha), Lunaria (63.1 t/ha), and Pride 004 (60.6 t/ha) showing significantly higher yields than the control variety Local (34.5 t/ha). Futoski had the highest head weight (1.6 kg) and Lunaria had the highest compactness (27.2 g/cm), although both metrics were comparable among top-performing varieties. Ditma matured the fastest, requiring just 60 days to harvest. Futoski, Lunaria, and Pride 004 demonstrated strong potential for cultivation and will be re-evaluated in 2024.

### Squash

Squash variety development through mutation breeding continued during the year. The average fruit weight from the F3 generation ranged from 1.32 to 1.73 kg, with diameters of 16 to 19 cm and heights of 7 to 10 cm. Trials for F4 progeny selection is ongoing.

### Spinach

The performance of eight spinach varieties (All Green, Red Tabby, KSP 80 F1, KSP 1602 F1, GLB01, AX 4-9058 F1, Superking, and Koy-choy) was evaluated at Réduit. The highest yield was recorded in GLB01 (41.0 t/ha), although it did not differ significantly from those of Koychoy (31.9 t/ha), Red Tabby (30.8 t/ha) and KSP81 (26.7 t/ha). Varieties All Green, GLB01, KSP 1602, KSP 81, and Superking were found to be susceptible to bolting.

### Kale

The performance of two commercial Kale varieties Nolan and Toscana and two varieties from Australia namely, Russian Red and Dwarf Green Curl (Figure 8) were evaluated at Réduit. Yield did not differ significantly among varieties and ranged from 1.2 t/ha in Russian Red to 4.4 t/ha in Nolan. Variety Nolan will be recommended in 2024, while varieties Russian Red and Dwarf Green Curl will be further evaluated.



Figure 8: From left to right varieties Nolan, Dwarf Green Curl, Russian Red and Toscana

### Swiss Chard

The performance of seven Swiss chard varieties (Lucullus, Fordhook Giant, Argentata, Charlie, Red Rhubarb, Greenwave, and Bionda a Costa) was evaluated at Réduit. Bionda a Costa was highly susceptible to *Cercospora peticola* disease while poor germination was observed in Red Rhubarb. Yield did not differ significantly among

varieties and ranged from 16.0 t/ha in Bionda a Costa to 22.8 t/ha in both Lucullus and Fordhook Giant. Significantly longer leaf was recorded in varieties Lucullus (56.3 cm), Argentata (54.6 cm) and Charlie (55.1 cm) compared to Fordhook Giant (41.7 cm) and Red Rhubarb (46.8 cm). Furthermore, leaf width was significantly higher in Argentata (17.0 cm) compared to that in Red Rhubarb (13.3 cm). Fordhook Giant, Greenwave, Lucullus, Charlie and Argentata will be recommended in 2024.

### Asparagus

The impact of two harvesting methods (Taiwanese and European) on the performance of six asparagus varieties (Early California, Pacific Green, Pacific Challenger 2, Pacific Purple, Pacific Summit, and Patron) was evaluated at Richelieu and Réduit. An average of 11 harvest rounds were made for each method. At Richelieu, no significant difference in yield was observed among the varieties using both harvesting methods. In contrast, at Réduit, significant differences in yield were observed among varieties using both methods of harvest with a significantly lower yield recorded in variety Patron (2.0 t/ha) compared to the other varieties which ranged from 2.4 to 4.1 t/ha using the Taiwanese method of harvest. Using the European method of harvest, a significantly higher yield was recorded in the variety Pacific Summit (5.5 t/ha), followed by Patron (4.9 t/ha) and Early California (4.1 t/ha) compared to the other varieties. Further evaluation is needed to confirm the results before recommending the best varieties and harvesting methods.

### Industrial Hemp

The new industrial hemp variety Seb Ma, imported from the USA in 2023, was sown in August 2023. Initial germination recorded was 60% after one week. Early growth was slow, but by week 10, plants reached 3 metres in height. Vegetative growth was excellent, no pest or disease were recorded while no flowering was observed. The crop was harvested in February 2024. Water retting was carried out for a period of 14 days for fibre extraction. Fibres were analysed at the Faculty of Engineering, UoM. The tensile strength of variety Seb Ma was significantly low (0.006 GPa) compared to the other two hemp varieties evaluated in 2022, namely Futura 83 (4.590 GPa) and Fibror 79 (4.560 GPa).

## CROP PRODUCTION UNDER PROTECTED STRUCTURE

### Cucumber

Seven English cucumber varieties namely Boreal, 102/189, Bowing, Bomber, Snow Cherry, Dreamliner, and Nokya were evaluated under a hydroponic system at Wooton, alongside the control variety Acylia. Bowing had the highest number of fruits per plant (28.0), though this was not significantly different from most other varieties, except Snow Cherry, which had the fewest fruits (11.7). Snow Cherry had the largest fruit circumference (17.5 cm), similar to Boreal (16.5 cm), 102/189 (16.7 cm), and Nokya (16.7 cm), but showed high susceptibility to powdery mildew infection. No significant differences were observed in average fruit weight and length. Bowing and Dreamliner were identified as promising and will be re-evaluated in 2024.

### Tomato

Four salad tomato varieties (Valouro, 4201 F1, Elpida, Millonety) and three cherry tomato varieties (Marinika, Orange Paruche, Candle Light) were tested under a hydroponic system at Wooton. Elpida had the highest average fruit weight (271.1 g) and produced the largest fruits, while Millonety had the smallest fruits. There

were no significant differences in yield or number of fruits per plant for salad tomatoes while for cherry tomatoes, Marinika produced the most fruits per plant (137.5) and the largest fruits (3.6 cm). Both types of tomatoes were susceptible to *Stemphyllium* leaf blight, affecting yields. Elpida and Marinika were identified as promising and will be re-evaluated in 2024 (Figure 9).



Figure 9: Promising salad variety Elpida (left) and cherry tomato Marinika

Ten tomato varieties were evaluated under a hydroponic system at Réduit and included THN 988 (control), Jupiter, Anushka, Disha, Ryna, HVTM 215, KSP 1430, KSP 1431, BR 594, and Sultan. At Wooton, an additional variety, Cobra, was also assessed. At Réduit, the heaviest fruits obtained were from BR 594 (133.5 g), but this was not significantly different from Jupiter (116.2 g), Ryna (82.7 g), Sultan (81.7 g), and THN 988 (81.5 g). Jupiter produced the longest fruits (7.1 cm). Yield across varieties ranged from 3.5 to 4.8 kg/plant without significant differences. At Wooton, the highest fruit weight was from THN 988 (110.6 g), but not significantly different from other varieties. Jupiter and THN 988 had the longest fruits (6.4 cm and 6.3 cm, respectively), while Cobra (4.6 cm) and Anushka (4.4 cm) had shorter fruits. Yield ranged from 1.3 to 2.7 kg/plant, with no significant differences. The varieties showed potential for hydroponic production and will be re-tested.

Ten tomato lines (CLN 3024 A, CLN 3212 C, CLN 3241Q, FMTT 1733 E, CLN 3726 D, CLN 4018 B, CLN 2498 D, CLN 3241 H-27, FMTT 1733 D and CLN 3938 C) were evaluated for their performance under a low-cost protected structure at Wooton. Varieties Swaraksha and THN 988 were used as control. Significant differences were observed amongst the varieties in fruit weight, length, and width. Based on the results, varieties CLN 3024 A and CLN 3938 C were discarded due to green shoulder and large fruit size, respectively. The remaining varieties will undergo further assessment to determine their suitability for cultivation under a sheltered farming system.

### Strawberry

Seven strawberry varieties (Festival, Favori, Portolas, San Andreas, Sweet Sensation, Brilliance, and Beauty) were evaluated in a hydroponic system at Wooton. No significant differences were found in average yield per plant, which ranged from 117.3 g in Festival to 183.6 g in Sweet Sensation, or the number of fruits per plant, ranging from 8.2 in Festival to 11.9 in Beauty. Fruit length varied from 4.0 cm in Favori to 4.9 cm in San Andreas, and fruit diameter ranged between 3.3 cm in Beauty to 3.8 cm in San Andreas. San Andreas, Portolas, Brilliance, and Sweet Sensation had significantly higher fruit weights (23.7 g to 28.9 g). The absence of bees likely affected commercial fruit yield, nevertheless, Sweet Sensation and San Andreas were identified as promising varieties.

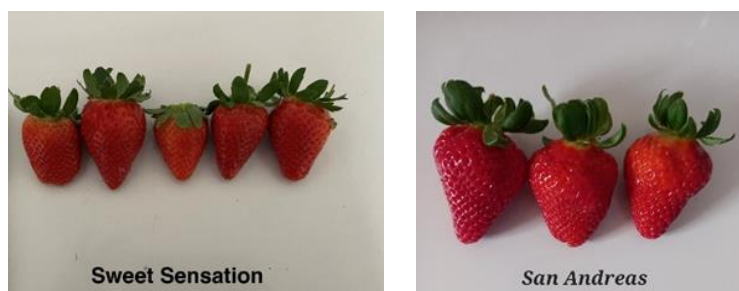


Figure 10: Promising strawberry varieties Sweet Sensation and San Andreas

## Melon

Five melon varieties (Divine, Cezanne, 266 F1, Gladial, and Caribbean King) were evaluated under a hydroponic system at Réduit. The average yield per plant ranged from 0.7 kg/plant for Divine, Cezanne and Caribbean King to 1.2 kg/plant for Gladial and 266 F1. Average fruit weight ranged from 0.8 kg (Cezanne) to 1.3 kg (266 F1), and average fruit length varied from 18.5 cm (Cezanne) to 22.5 cm (266 F1). The highest fruit circumference was recorded with variety 266 F1 (44.9 cm), however, it did not differ significantly from those of Gladial (42.1 cm) and Caribbean King (43.6 cm). Variety Gladial (Figure 11) showed promising results, as it produced a comparatively high number of fruits per plant and a high yield. It will be further tested.



Figure 11: Promising Melon variety Gladial

## Bean and Cowpea

Two determinate bean varieties, FBS2 and Masterpiece and an indeterminate variety Trepadora along with one variety of cowpea (NS 621) were evaluated under a hydroponic system at Réduit. The climbing variety Trepadora showed promising results in terms of yield and pod characteristics, with the highest average yield of 481.1 g per plant and the highest number of pods (79.16), while FBS2 and Masterpiece (Figure 12) had comparable, but slightly lower values. The average yield of cowpea NS 621 obtained per plant was 331.46 g, with 15.64 pods per plant. These varieties will be re-evaluated.



Figure 12: From left to right varieties Trepadora, Masterpiece and FBS 2

At Wooton, six bean varieties namely three determinate (FBS2, FBS1, and Masterpiece) and three indeterminate (Trepadora, Salamanca, and Danny) were assessed under hydroponic system. Highest yield per plant (442.5 g/plant) was recorded in variety Danny, however it did not differ significantly from those of FBS2 (436.1 g/plant), Trepadora (416.5 g/plant), Masterpiece (330.9g/plant) and FBS1 (320.6 g/plant). Varieties Danny (Figure 13) and Trepadora, both climbing beans, showed promising results for hydroponic cultivation. These varieties will be further evaluated.



Figure 13: Promising bean variety Danny

### Butternut

Five varieties of butternut squash (Sibelle, Shiba, Pluto, Huanggan, and Aruna) were assessed under hydroponic systems at Wooton and Réduit. Highest yield was recorded in Shiba (Figure 14) at Réduit (1.4 kg/plant) although it did not differ significantly from that of Sibelle (1.1 kg/plant), while at Wooton significantly higher yield was recorded in variety Huanggan (0.63 kg/plant) and Shiba (0.56 kg/plant) compared to Sibelle (0.29 kg/plant) and Pluto (0.25 kg/plant). At both sites, the average weight of fruits from variety Pluto and Huanggan were significantly higher compared to the other varieties. Huanggan produced the longest fruits at both locations. Variety Shiba demonstrated promising performance in terms of yield and fruit characteristics under hydroponic cultivation, and will be further evaluated.



Figure 14: Promising butternut variety Shiba

### Rose

Five rose varieties namely Avalanche, Top Secret, Tropical, Jumelia, and Peach Avalanche were evaluated at Réduit under a hydroponic production system. Yield and characteristics varied among the varieties, with Avalanche producing the highest number of flowers per plant per year (13.7) and Jumelia exhibiting the longest average stalk length (73.4 cm). Bud height ranged from 4.0 cm (Top Secret and Avalanche) to 5.4 cm (Jumelia), while bud diameter varied from 5.5 cm (Tropical) to 7.2 cm (Jumelia).

### Gerbera

Four varieties of gerbera namely Brilliance, Forges, Pink Elegance, and White House were evaluated in a hydroponics production system at Réduit. White House exhibited the highest number of blooms per plant (22.0) but did not differ significantly from Pink Elegance (21.4) and Brilliance (20.5). Brilliance (63.5 cm) and Forges (58.7 cm) had significantly longer flower stalks compared to the other varieties. Flower diameter varied insignificantly among varieties, ranging from 9.9 cm in Brilliance to 10.8 cm in Pink Elegance. All varieties showed promising results for commercial cultivation in hydroponic systems.

### Gherkins

Three gherkin varieties, C-13, C-20, and Chandini (control), were evaluated under a protected structure at Wooton. Results indicated no significant differences among the varieties for yield, average fruit weight, length, or diameter. While the yield ranged from 1.8 to 2.7 kg/m<sup>2</sup>, the control variety, Chandini, yielded slightly higher compared to the two new varieties. Average fruit length ranged from 6.8 to 7.1 cm, and average weight ranged from 16.3 to 18.1 cm with fruit diameter remaining consistent. The trial will be repeated.

### Zucchini

Two zucchini varieties, Star 01 and Star 8083, were evaluated at Richelieu under both open-field and protected conditions. Under the protected structure, both varieties produced four fruits per m<sup>2</sup> with an average weight of 0.89 to 0.93 kg, with no virus infection or fruit fly infestation. In the open field, each variety yielded two fruits per m<sup>2</sup> with an average weight of 0.54 to 0.59 kg, but 15% of fruits were infested with fruit fly larvae, and five virus-infected plants were recorded in Star 01. Protected cultivation resulted in higher

yields, larger fruit size, and no virus infection, highlighting its potential for successful zucchini production with proper pollination.

### Swiss Chard

The performance of seven Swiss chard varieties (Fordhook Giant, Greenwave, Lucullus, Charlie Argentata, Bionda a Costa and Red Rhubarb) was evaluated at Wooton under a protected structure. While no significant differences were noted in yield per hectare, average number of leaves per plant, and average leaf width, significant variations were observed in average leaf length. The varieties Lucullus (58.5 cm), Fordhook Giant (57.5 cm), Charlie (56.3 cm), and Bionda a Costa (53.8 cm) exhibited higher average leaf lengths compared to the other varieties, which ranged from 47.6 cm to 52.6 cm. Based on these findings, the varieties Fordhook Giant, Greenwave, Lucullus, Charlie, and Argentata will be recommended for cultivation in 2024.

### Spinach

The performance of eight spinach varieties (All green, Red Tabby, KSP 81 F1, KSP 1602 F1, GLB 01, AX 4-9058 F1, Superking and Koy-choy) was assessed at Wooton under a protected structure. The highest yield was recorded in variety KSP1602 (75.3 t/ha) however it did not differ significantly from those of KSP 81(60.9 t/ha), GLB 01 (46.1 t/ha), Koychoy (37.0 t/ha) and Superking (35.0 t/ha) with yield ranging between 37.0 and 60.9 t/ha. No significant differences in plant height and number of leaves per plant was observed among the varieties. KSP 1602, KSP 81, and Superking were noted to be susceptible to bolting. Variety GLB01 with a yield of 46.1 t/ha, 57.7 leaves/plant and a plant height of 41.7 cm showed promising results and will be recommended for further evaluation in 2024.

### Mushroom

The fruiting performance of shiitake (*Lentinula sp.*) mushrooms using cold water immersion in two different environments (16°C and ambient) was studied. Under cold conditions, fewer fruiting bodies (2.2) per bag weighing 49.1 g were produced compared to under ambient conditions where an average of 3.9 fruiting bodies per bag weighing 70.0 g was produced. In contrast, fruiting bodies under cold conditions had larger cap diameters (6.3 cm) compared to those in the ambient conditions (5.1 cm). Furthermore, fruiting bodies from the cold room had scaly caps, while those from ambient conditions had smooth caps (Figure 15). Overall, findings indicated that although the cold environment led to a decreased yield per block compared to ambient conditions, it fostered the growth of larger fruiting bodies with dimensions more favourable for the market.



Figure 15: Shiitake mushroom cap from cold conditions (left and ambient conditions (right)

## ORNAMENTALS

### Anthurium

The breeding program initiated in 2001 to develop new anthurium varieties with enhanced flower quality, in terms of shape, size, color variation of spathe and spadix and yield was pursued. From the third batch of cross carried out in 2019 between Carisma, Laguna and Osaki, three lines namely, PA-11, PA-17, and PA-18 are being multiplied. Additionally, nine standard and two potted lines (Figure 16) were selected from crosses made in 2020 between Calisto, Meringue and Tropical. These lines will be further observed prior to recommendation for release.



Figure 16: New lines of potted anthurium selected

### Chrysanthemum

The performance of 12 chrysanthemum varieties (Champagne Orange, Hombril, Prada Sweet, Country, Veronica, Pina Colada Yellow, Autumn Yellow, Isabel, Pina Colada Cream, Lamira, Karma Pink and Pina Colada) was evaluated under two production techniques namely in a greenhouse with lighting and shade system at Réduit and in a greenhouse without lighting and shade systems at Wooton. At Réduit, under increased daylength (16 hours), Prada Sweet produced the most flowers (23.1 per plant), while Karma Pink had the largest flower diameter (6.4 cm). At Wooton, without light control, the variety Karma Pink (16.7), Pina Colada (20.2) and Veronica (22.8) showed a substantial increase in flower yield compared to that of the controlled light environment at Réduit. Varieties like Veronica and Pina Colada (Figure 17) performed well in environments without increased daylength, making them suitable for cultivation in superhumid regions.

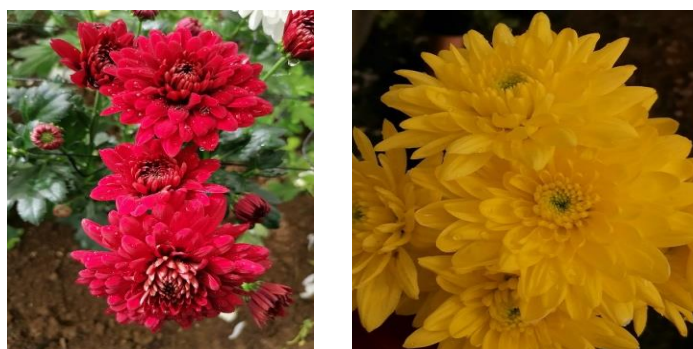


Figure 17: Flowers of promising varieties  
Veronica (left) and Pina Colada (right)

The performance of three chrysanthemum varieties namely Cosmo Pink, Cosmo Bronze, and Cosmo Yellow improved as potted ornamental plants were evaluated in plastic pots at Réduit. Results indicated that Cosmo Yellow exhibited the highest growth response in terms of plant height (19.3 cm), leaf width (2.9 cm), number of flowers (9.4), and flower diameter (4.6 cm).

## Gerbera

The performance of four introduced gerbera varieties (Brilliance, Figaro, Forges, and White House) was evaluated at Réduit and Wooton. At Wooton, variety Forges exhibited early flower bud emergence (87.4 days), superior flower diameter (9.6 cm), and longer flower stalk length (61.5 cm) compared to the other varieties. It also produced the highest number of flowers per plant (20.1). Figaro had the latest flower bud emergence (102.3 days) and the shortest flower stalk length (52.2 cm), while Brilliance had the smallest flower diameter (7.8 cm) and the lowest number of flowers per plant (14.1). At Reduit, similar trends were observed. Forges showed early flower bud emergence (86.8 days), larger flower diameter (10.0 cm), and the highest number of flowers per plant (5.2). Brilliance recorded the longest flower stalk length (54.1 cm). Figaro had intermediate characteristics, while White House exhibited the longest days to flower bud emergence (90.1 days), smallest flower diameter (8.2 cm), shortest flower stalk length (52.7 cm) and lowest number of flowers per plant (3.7). Overall, Forges consistently performed well in terms of early flowering, flower quality, and flower yield at both sites.

## Rose

The productivity of five rose varieties (Avalanche, Top Secret, Tropical, Jumelia, Peach Avalanche) was evaluated at Réduit. Variety Jumelia exhibited early sprouting (32.8 days) and flowering (44.3 days), while Tropical (45.7 days) showed delayed sprouting. Tropical (18.1) produced the highest number of flowers per plant, followed by Top Secret (16.8), while Jumelia (5.3) yielded the lowest number of flowers. Peach Avalanche (132.6 cm) displayed the tallest plant height, followed by Top Secret (112.1 cm), with Jumelia (87.1 cm) being the shortest. In terms of flower size, Tropical (10.7 cm) had the largest flowers, while Jumelia (5.6 cm) had the smallest. Variety Tropical showed promising attributes such as early flowering, high flower yield, and large flower size.

## PLANTING MATERIAL DEVELOPMENT

### Micropropagation

Potato plantlets of varieties Vigora, Spunta, Everest and clones 5, 6, 9, 27 and 28 were propagated through tissue culture for mini tuber production. A total of 131 kg mini tubers were produced (Vigora: 82.9 kg, Spunta: 17.79 kg, Everest: 10.04 kg, clone 5: 2.5 kg, clone 9: 0.85 kg, clone 27: 14.8 kg, clone 28: 2.16 kg).

*In vitro* plantlets of local tea clones were maintained in a slow growth medium. Around 200 tea potted plants are available in the nursery.

About 400 hardened TC plants of a new promising anthurium line (coded as Ca) is available in the nursery and about 1500 *in-vitro* plantlets are available in the growth room. Additionally, *in vitro* stock plantlets of 8 lines of anthurium (A2, C2, D1, D2, PVGR, PVR, Mar4 and Mar5) are being maintained in slow growth medium.

Pomegranate plug plants of the Bhagwa variety were introduced from India. Currently, both the Bhagwa variety and the CH 23 variety from China, sourced from Agricultural Services, are being micro-propagated.

### Supply of Plants

A total of 8,851 plants were sold, this included 6,323 hardened banana plants, 1148 Colocasia PNG13, 547 anthuriums, 87 breadfruit plants, 334 pomegranate and 412 other plant species. A total of 625 plants of various crop species were supplied free of charge to farmers for promotion on farm.

### Quality Declared Seed

In 2023, 18 tonnes of Francia and 4 tonnes of Bellarose mother bulbs were planted at various locations. Adverse weather and late planting caused severe disease issues, reducing expected seed production by 50%. A total of 17.1 kg Bellarose seeds and 482.1 kg of Francia seeds were produced.

In 2023, 56.2 kg of bean seeds (FBS1, FBS2, White Pulse, and Ferrina) were distributed to 12 growers for seed production. Only four growers successfully produced seeds, yielding 63.7 kg of Ferrina, 79.5 kg of FBS2, and 22.2 kg of White Pulse.

### Production of pre basic G1 Seeds

6000 kg of pre-basic seeds of potato variety Vigora were produced in 2023. These pre-basic potato seeds will be made available to potato growers in 2024 to encourage the cultivation of potato variety Vigora which is resistant to late blight.

100 kg of pre-basic G1 and 159 kg of basic G2 seeds of bean pulse variety Ferrina were produced. In addition, 100 kg of pre-basic G1 and 490 kg of basic G2 seeds of variety FBS1 were produced. The G2 seeds will be used to produce Quality Declared Seeds (QDS) by the Barkly Experimental Station, corporate and small growers seed producers.

## FRUITS AND NUTS

### Avocado

In 2023, a new plot was set up at Richelieu while that of Réduit was extended with introduced accessions namely Russel, Gem, Lamb Hass, Pinkerton, Ryan, Fuerte and Hass. A total of 17 local accessions have so far been planted from 2021 to 2023 including accession Shandrani, Azor, P. Poucet, L3, L9, L10, L5, AloeR1, R5, ENLT3, ENLT5, Brunner, Fuel, Fenix, G.Gaube, ENLT12 and ENLT11. In 2023, production at Réduit was better in most varieties compared to that in 2022 with varieties Ettinger, Fuerte and Rincon producing 42 kg, 108 kg and 151 kg of fruits per tree respectively.

### Banana

In 2023, FHIA-23 and FHIA-03 were the focus of evaluations, with FHIA-02 and FHIA-01 also added for their resistance to foliar diseases. FHIA hybrids at Réduit showed promise in reducing Eumusae leaf spot and freckle disease impact. FHIA-17 maintained high yields (21 kg/bunch, 143 fingers) even under rainfed conditions. Among cooking types, FHIA-03 was early bearing but had a lower yield (11 kg/bunch, 95 fingers) compared to FHIA-25 (23 kg/bunch, 170 fingers). FHIA-23, a dual-type variety, showed good yields (22 kg/bunch, 146 fingers) and freckle disease resistance. Most FHIA hybrids (except FHIA-18) were resistant to freckle disease and had no crown rot, though they had a higher finger drop rate when ripe. Seven plantain accessions were introduced. These adapted well locally, showing no disease susceptibility. In 2023, *Musa textilis*, a renowned species in the textile industry, was introduced and subjected to *in-vitro* multiplication. Additionally, a germplasm conservation plot was established for elite sucker production and mass plant production.

### Blueberry

In December 2022, 300 plants of low-chill varieties of blueberry (Centurion, Sharpblue, Misty) were introduced as plugged- rooted plantlets. These demonstrated slow adaptations in the nursery, but the eventual flowering and fruiting of the surviving potted plants indicated that the chilling requirements of these varieties can potentially be met under local conditions.

### Macadamia

Evaluation of the eleven introduced varieties namely A16, A4, 816,849, 842, 814, N2, 695, 791, GVE and Beaumont established on station at Réduit, Wooton and Richelieu between 2018 and 2021 was pursued. In 2023, 60% of five-year old trees were bearing fruits with varieties 695 and A4 showing promising results. Notably, variety A4 exhibited dual flowering seasons. The main harvest period for variety A4 was noted to occur from March to April, with a second harvest from early June to the end of June. Harvest yields varied across varieties, with variety 695 averaging 1.2 kg per tree and varieties A4 and GVE averaging 3.0 kg per tree.

The year also marked the first bulk harvest from research plots and private growers. Assistance was provided to growers for processing and involved dehusking, air-drying (curing) of nut-in-shell, and monitoring kernel moisture content. However, during this process, challenges emerged, such as fungal growth and moisture-related issues which negatively impacted the quality of the kernels.

### Litchi

Three newly introduced litchi varieties namely, Kiamana (from Australia in 2017), Garnet and Fayzeesui (from South Africa in 2022) are under evaluation at Réduit and Pamplémousses. Garnet and Fayzeesui are still at the vegetative stage. Variety Kiamana was found promising in terms of yield and quality of fruits. Panicle emergence was observed in late July, with fruit set occurring in late September and harvest in November. The potential yield of a five-year-old tree is 25 kg with bigger fruits weighing on average 27.8 g/fruit, average diameter of 3.6 cm and length of 3.3 cm. The average Brix was 18° with an acidity of 3.1. Fruits were juicy and sweet with 80 % chicken tongue. The pulp-to-seed ratio was 3.1:1.

### Longan

The yield and fruit characteristics of two longan varieties namely Biew Kiew (Figure 18) and Chompoo (Figure 19) were studied at Réduit. For trees with large canopy, up to 84.5 kg fruits were harvested from Biew Kiew amounting to a maximum of 9800 fruits per tree while in Chompoo the estimated yield was between 15 and 20 kg with up to 2600 fruits produced per tree. Biew Kiew produced bigger (7.1 to 8.6 g) and sweeter fruits (maximum Brix 22.6°) compared to Chompoo (7.3 to 7.7g; Brix 19.7°). The peel colour of the Biew Kiew variety is light brown while that of Chompoo is greyed orange in colour at maturity.



Figure 18: Biew Kiew Variety



Figure 19: Chompoo Variety

## Cocoa

In 2023, three new cocoa clones (ICS1, TSH 16, TSH 774) were introduced from the International Cocoa Quarantine Centre and grafted onto local Criollo varieties at Réduit, with 40 grafts prepared. Evaluation of cocoa varieties is ongoing, including three local accessions (C10, C5, Criollo) and eight imported clones (ICS 6, ICS 46, UF 613, ICS 68, ICS 84, ICS 48, ICS 29, ICS 35).

To enhance post-harvest quality, fermentation and drying processes were conducted on five cocoa batches from Clavet and Chamarel. Some 2.0 kg fermented dried beans were processed, roasted, cracked, winnowed, and ground into powdered cocoa, resulting in a product with a bitter taste and gritty texture.

## Strawberry

Eight strawberry varieties (Sweet Sensation, Brilliance, Favori, Festival, Beauty, Portola, San Andreas and Manon des Fraises) introduced from Egypt and France were evaluated at Wooton. Favori showed the earliest flowering and fruit production, with mid-harvest on September 18, 2024, compared to others. Manon des Fraises and Favori had no plant mortality from leaf spot diseases, while Festival and Portola had the highest mortality rates. Average yields per plant ranged from 76.1 g in Beauty to 189.5 g in Sweet Sensation, with no significant difference in fruit count per plant. Sweet Sensation, Manon des Fraises, Favori, Brilliance, and San Andreas had higher marketable yields (135.7-177.1 g/plant), while Festival, Portola, and Beauty had lower yields (76.1-115.1 g/plant). Sweet Sensation had the highest percentage of large marketable fruits (23.8%), while other varieties ranged from 1.6% to 14.0%. Manon des Fraises had the sweetest fruits (average brix of 7.2), and Portola was the least sweet (brix of 2.1). Sweet Sensation, Manon des Fraises, San Andreas, and Favori were identified as promising varieties.

## EXTENDING SHELF LIFE OF FRESH PRODUCE

### Post Harvest

A shelf-life evaluation of cape gooseberry stored at 12°C in bio punnets showed that husked fruits lasted 14 days, compared to 10 days for unhusked fruits. Husked fruits also experienced less weight loss and delayed fungal growth.

Tomato fruits of three cherry varieties stored at 12°C in biodegradable clamshell punnets lasted 6-8 days longer than those in perforated bioplastic bags, with Marinika having the longest shelf life of 59 days. Ten semi-determinate cooking varieties stored at 8-9°C in bioplastic bags showed that HVTM 215 had the longest shelf life of 45 days, while Ryna had the shortest at 25 days. Four salad varieties stored at 12°C in bioplastic bags had better shelf life than unpacked ones, with Millonety lasting 38 days and showing the highest firmness and lowest disease incidence.

Longan varieties Biew Kiew and Chompoo, stored at 11-12°C in either biodegradable clamshell punnets or perforated bioplastic bags, had a shelf life of 15 days with brix values of 20-22°.

Avocado varieties Ettinger, Rincon, and Fuerte, stored at 7-8°C in bio-LDPE plastic bags, maintained quality and firmness for 8 weeks for Fuerte and Rincon, and 5 weeks for Ettinger, with no post-harvest disease observed.

A post-harvest package for taro chunks, including cold storage and vacuum packaging, preserved the bright light purple colour, taste, and starchiness for up to 6 months at -15°C, with minimal weight loss and no post-harvest disease.

A vase life solution composed of tap water, sodium hypochlorite (87ppm), sucrose (4%) and citric acid (200 ppm) was found promising in significantly extending the vase life of gerbera, chrysanthemum and orchid flowers.

Storing carrot stecklings in perforated plastic bags at 0.5°C and 70% relative humidity was found to maintain 100% storability after six months.

The storability of eight hybrid onion varieties, including two promising ones (SON 1806 and SON 1807) and six new hybrids (Yakuti, ON 3154, ON 2823, Ngwazi, Agrippa, and Amit F1), along with three control varieties (Rosada, Askari, and Francia) was evaluated over four months under ambient (25-30°C, RH 65-75%) and cold storage (2-4°C, R.H 65-75%) conditions at the Agricultural Marketing Board. Agrippa (20.3%) and Amit F1 (24.6 %) exhibited lowest storage losses under ambient conditions while Agrippa has the best performance in cold storage. SON 1807 was recommended for commercial planting in 2023, with further trials planned for 2024 to validate results for Agrippa, Amit F1, SON 1806, and Ngwazi.

The storability of three hybrid onion varieties (SON 1807, Askari, and Rosada) and the control variety Francia was evaluated over two months under ambient (25-30°C, RH 65-75%) and cold (2-4°C, RH 65-75%) storage conditions at AMB. In ambient conditions, storage losses ranged from 22.3% to 26.9% after two months, with no significant differences among the varieties. In cold conditions, Askari had lower storage loss (5.8%) compared to Rosada, SON 1807, and Francia (8.0% to 9.4%).

The storability of the promising open pollinated onion varieties Roxa and AVON1067 was comparable to that of Francia under both ambient (25-30°C, 65-75% RH) and cold (2-4°C, 65-75% RH) conditions. Storage losses were lower under cold conditions. After 4 months, losses under ambient conditions ranged from 18.6-27.5%. Under cold storage, losses were 3.5-4.1%. Both Roxa and AVON1067 can be stored for up to 3 months under ambient conditions and 4-5 months under cold storage.

### Agro-Processing

To enhance the value of local produce, extend shelf life, reduce food loss, promote food security, and create innovative healthy products, around 15 new protocols for processed products were developed, along with completed shelf-life studies for 10 value-added products. These include items like dry seaweed products, moringa and turmeric capsules, dehydrated guava, tomato leather, sweet pepper dip, butterfly blue pea cordial and tea, roselle and ginger cordial, and red bean-based products such as frozen burgers and flour. The estimated product yield, packaging type, and shelf life for each product were assessed.

Additionally, improvements were made to the vacuum packing protocol for peeled mature green bananas. Varietal assessments were conducted on sweet potato, banana, and cassava to determine their processing potential for flour and crisps. Technical support provided to a private company led to the development of seaweed products like powder, flakes, and capsules with a shelf life of up to 18 months.

## CLIMATE SMART AGRICULTURE

### Irrigation and water management

A 500 m<sup>2</sup> KSNM Spray irrigation system for leafy vegetables and fine herbs was evaluated on stations and on-farm and compared with a sprinkler irrigation system. The KSNM Spray irrigation system was found to be an appropriate irrigation system for off-season leafy vegetable crops and fine herbs production in summer (Figure 20).



Figure 20: Production of leafy vegetables under the KSNM Spray Irrigation System

Furthermore, it allowed improved water management at the farm level with a reduced irrigation duration of 6 minutes/ day, higher water efficiency and improved yields of 30-40 % compared to sprinkler irrigation.

A 1000 m<sup>2</sup> KSNM Drip Fertigation System for vegetables crop production (Figure 21) was evaluated on station and on-farm and compared with the conventional pressurized drip fertigation system. The system was found to be more effective than the conventional Venturi drip fertigation system in achieving 15-20 % improved yields and quality.



Figure 21: Production of cabbage and passion fruit under the KSNM Drip Fertigation System

The KSNM drip fertigation system was evaluated at Réduit for growing squash and watermelon, compared to standard drip irrigation with recommended fertilizer rates. For squash, the KSNM system significantly improved yield and quality, resulting in an average of 6.4 fruits per plant, 4.1 kg fruit weight per plant, and 48.5 cm fruit circumference, compared to the control's 4.2 fruits per plant, 2.5 kg weight, and 43.2 cm circumference, increasing squash weight per plant by 34.4%. For watermelon, the KSNM system also significantly improved yield and quality, with an average fruit weight of 8.1 kg, length of 44.1 cm, and circumference of 66.9 cm, compared to the control's 3.8 kg, 32.8 cm, and 54.0 cm, increasing watermelon weight per plant by 54.2%.

A 350 m<sup>2</sup> gravity-fed Exudative Tube Application (ETA) irrigation system for vegetables crop production was evaluated on station and on-farm and compared to the conventional gravity-fed drip fertigation system (Figure 22). An increase of 26 to 30 % in yield and improved quality of high-density and low-density vegetable crops were achieved and are attributed to the more uniform fertilizer solution supply at the root zone level by the 100 % porous textile hose. The system provides an alternative to the conventional gravity-fed drip fertigation system.



Figure 22: Production of vegetable crops under gravity-fed ETA System

The SF-2 Futurepump with 500 m<sup>2</sup> drip irrigation was evaluated on station and on-farm (Figure 23) and at the Mauritius Prison of Beau Bassin. The system was found to be suitable for fields devoid of electrical supply.



Figure 23: SF-2 Futurepump solar power-driven pump with drip irrigation

Ten units of the I-Metos Automatic Weather Station (Figure 24) fully equipped with solarimeters, soil moisture sensors and disease forecasting facility were installed on Research Stations and Model Farms in 10 different agro-climatic zones. Agro-climatic data and disease forecasting for tomato, onion, potato, creepers and banana, and livestock are readily available (Figure 25). The activity is ongoing. Future work will involve the development of an app with the collaboration of the IAEA as a tool to enable farmers and Extension Staff to make informed decisions on irrigation and disease management.



Figure 24: I-METOS Automatic Weather Station



Figure 25: Data access through Field Climate Online

A climate-smart rooftop rainwater harvesting structure was developed and integrated with an SF-2 Futurepump solar-powered pump (Figure 26). The system includes a 2500-liter plastic water tank, equipped with a rain collector and solar water pump. Six such units were installed and evaluated at Model Farms, on-farm sites, and the Mauritius Prison in Beau Bassin. The goal is to enable farmers to collect and utilize rainwater for various in-field applications using the solar pump. The pump's design allows for easy dismantling and transportation, reducing the risk of theft.



Figure 26: The Rainwater Collecting Tank with the SF-2 Futurepump Solar Power-Driven Pump

The efficacy of drip fertigation with soluble fertilizers was evaluated on bean, tomato, and eggplant, compared to drip irrigation with conventional granular fertilizers at the same nutrient rates at Réduit. For beans, drip fertigation significantly increased yield by 22.3%, producing 365.5 g/plant and 20.1 cm pod length, compared to 277.7 g/plant and 19.0 cm pod length with granular fertilizers. For tomatoes, drip fertigation resulted in a 25.9% higher yield (5.2 kg/plant), 22.2% more fruits per plant (81), and larger fruit size compared to granular fertilizers (3.9 kg/plant, 63 fruits/plant). For eggplants, drip fertigation led to a 48.1% increase in the number of fruits per plant (24.3), 43.8% higher fruit weight per plant (1.2 kg), and larger fruit dimensions, compared to granular fertilizers (12.6 fruits/plant, 0.7 kg/plant).

A Cosmic Ray Neutron Sensor (CRNS) has been installed at Plaine des Papayes to measure topsoil water content across 30 hectares, enhancing large-scale irrigation water management (Figure 27). Calibrated and operational, the CRNS will aid the Irrigation Authority in optimizing water supply and irrigation management. FAREI will also use the CRNS to calibrate soil moisture data from satellite imagery and develop an app to help farmers optimize irrigation based on this data.



Figure 27: The Cosmic Ray Neutron Sensor at Plaine des Papayes

A fully automatic pressurized drip fertigation system for 1000 m<sup>2</sup> has been installed, featuring a rain sensor, soil moisture probe, and Wi-Fi for remote operation, and is operational at Réduit, Pointe aux Piments, and Fond du Sac. Additionally, an app developed by the IAEA creates spatio-temporal soil moisture maps and forecasts using satellite data and climate scenarios. This app integrates in-situ data with satellite information to help farmers manage irrigation precisely and determine water savings.

## SUSTAINABLE PRODUCTION

### Seaweed Composting

A trial on seaweed composting was conducted at Wooton, utilizing predominantly *Sargassum* and *Ulva* species collected from Bras D'Eau. Rainwater was used for washing the seaweed, with two washings to reduce salt content and removal of debris. Raw materials for composting included seaweed, bagasse (carbon source, bulking agent), and poultry manure (high N content). A composting mix ratio of around 7:3:2 (seaweed: bagasse: poultry manure) was used based on physical and chemical analysis. The development of seaweed composting technology was successful, with pending results for chemical and microbiological analyses and ongoing germination tests.

### Ecofriendly Fertilizers

The effectiveness of three eco-friendly fertilizer packages for onion and cabbage production was tested at Réduit. The packages, which combined various proportions of chemical fertilizers, GLS Enrich at the rate of 371 kg/ha, and Seasol at the rate of 3 mL/L, were compared with 100% recommended chemical fertilizer, cow manure at the rate of 30t/ha along with GLS enrich and Seasol as in the other treatments and no fertilizer (control). For onion, there was no significant yield difference between the 100% (32.8 t/ha), 50% (31.4 t/ha) and 75% (30.2 t/ha) chemical fertilizer packages, but the manure-based treatment (19.6 t/ha) yielded less. In cabbage production, while mean whole weight was not significantly different across treatments, the 100% (1.9 kg/unit) and 75% chemical (1.7 kg/unit) fertilizer packages had higher mean head weights compared to the 50% reduced chemical (1.4 kg/unit) and manure-based (1.4 kg/unit) treatments. In both trials, a significantly lower yield was recorded in the no-fertilizer treatment.

The effectiveness of calcium carbonate as a liming material to raise soil pH was evaluated in two trials with initial soil pH levels of 4.9 and 4.6. Treatments included control and calcium carbonate applied at varying rates (2t/ha, 3t/ha, 4t/ha, and 5t/ha in the first trial, and 3t/ha, 4t/ha, and 6t/ha in the second trial).

Over five weeks, calcium carbonate effectively reduced soil acidity, with the 3t/ha and 4t/ha rates showing the most significant pH improvement without causing phytotoxicity. It is recommended to apply calcium carbonate at 3t/ha to 4t/ha for soils with pH 4.5-4.8 to achieve optimal conditions for crop production.

The effect of Nano Urea liquid fertilizer (4% w/v), as foliar application, on Pak choy yield was evaluated at Wooton and included three treatments: 100% NPK recommended rate (NPK<sub>100%</sub>), 100% N with Nano Urea Liquid Fertilizer (4% w/v) and 100% PK recommended rate (N<sub>Nano</sub> PK<sub>100%</sub>), and No NPK Fertilizer. Results showed no significant difference in yield between treatments with a mean of 24.5 t/ha total marketable head weight recorded in (N<sub>Nano</sub> PK<sub>100%</sub>), 28.5 t/ha in NPK<sub>100%</sub> and 24.3 t/ha with no NPK Fertilizer treatments respectively. Nano Urea Liquid fertilizer did not increase marketable yield compared to the NPK recommended rate. A similar observation was recorded with the no NPK Fertilizer treatment thus indicating that soil nutrient content in the treatment plots may have already met crop demand.

### Agroforestry

A model agroforestry plot has been set up on an area of about 5 arpents at Britannia to assess its performance in the Mauritian context and for demonstration to the farming community. By the end of 2023, plants from

31 species have been planted. Challenges included monkey damage, water scarcity, theft, adverse climate conditions, and labour shortages. The project, still in its early stages, requires another 3 to 4 years to fully mature as a demonstration site. Annual monitoring of stem girth, canopy diameter, plant height, soil pH, and organic matter content is conducted to assess growth and carbon sequestration.

### Aquaponics

An aquaponics system was tested at Réduit with tilapia fish and various vegetables. Water parameters were regularly monitored, with results indicating suitable conditions for growth. Optimal nitrate and dissolved oxygen levels were achieved, and iron supplementation was necessary to address deficiencies. Average yields were: tomato 15.6 kg/m<sup>2</sup>, melon 16.7 kg/m<sup>2</sup>, pak choi 5.8 kg/m<sup>2</sup>, lettuce 7.25 kg/m<sup>2</sup>, and radish 2.5 kg/m<sup>2</sup>. Tilapia reached about 500 g in 7-9 months. The study confirmed that commercial aquaponics is a promising and sustainable food production method, provided there is proper system management and nutrient supplementation.

### Agroecology

Potato and bean companion cropping using agro-ecological practices at four locations (Britania, Petit Raffray, Plaine Sophie and Bois Marchand) was studied at different sites and compared to conventional methods. It involved reduced chemical fertilizer, farmyard manure with *Trichoderma* spp., intercropping, ecoservice plants, and biopesticides. Yields were below the national average due to diseases and low soil fertility, though plots with agroecological practices showed lower bacterial wilt incidence and better pest control compared to conventional methods. Beneficial arthropods increased with ecoservice plants. Despite challenges, the study generated interest in agroecological practices among vegetable growers.

## CROP PROTECTION

### Disease Management

The tolerance of four potato clones (142/161/4, 142/161/5, 161/142/16, and 29/5/10) and varieties, Vigora and Everest to early blight disease (*Alternaria solani*) compared to variety Spunta (control) was assessed at Réduit and Wooton. Early blight was observed in all varieties and clones at both sites. The mean disease severities of the clones and Vigora were significantly lower compared to Spunta, indicating their tolerance to early blight at both sites.

Nine strawberry varieties (Manon des fraises, San Andreas, Portolas, Camarosa, Favori, Festival, Brillance, Beauty and Sweet sensation) were evaluated for tolerance to *Pestalotiopsis* Leaf Spot disease at Wooton. Varieties San Andreas, Portolas, Camarosa (Figure 28), Festival, Brillance, Beauty, and Sweet Sensation (Figure 29) had 100% disease incidence, with high severity (4.0 to 4.9). Manon des fraises (Figure 30) and Favori (Figure 31) had lower incidences (87.1% and 96.9%, respectively) and lower disease severity (1.2 and 1.8 respectively).



Figure 28. Camarosa



Figure 29. Sweet Sensation



Figure 30. Manon des Fraises



Figure 31. Favori

A laboratory assay was conducted in 2023 to quantify seven bacterial phages using three *Ralstonia* bacterial strains. Additionally, some phages previously tested were multiplied for inoculation against *Ralstonia* strains.

The efficacy of 21 seed treatments for controlling seed-borne fungi in onion seeds was evaluated. Thiram dusting resulted in the highest germination rate, followed by hot water treatment (HWT) at 50°C/40 min, while HWT at 60°C reduced germination due to heat injury. Thiram and HWT improved germination from 3.7% to 53.7%, with Thiram combined with HWT showing the best results. HWT at 52°C/30 min + Thiram significantly reduced fungal incidence. HWT-treated seeds effectively controlled *S. vesicarium*. Agar plate analysis identified 21 fungal species, with *Aspergillus* spp., *Fusarium* spp., and *Penicillium* spp., being predominant. Two bacterial species were detected in local seed lots, with one showing 100% homology with *Pseudomonas allii* and *Pseudomonas extremorientalis*, and the other 99.5% homology with *Pseudomonas parafulva* and *Pseudomonas cremoricolorata*.

### Product Testing Against Pathogens

The efficacy of the following products was evaluated:

Bionse (*Bacillus subtilis* and *Pseudomonas* sp.) @ 5ml/L, Winero (*Bacillus amyloliquifaciens*) @ 5ml/L, PF Control 83 (oxymatrine and thymol) @ 1.3ml/L, Moringa @ 10ml/L Land Cuprofix (copper sulphate and mancozeb) was evaluated in a spraying programme consisting of two consecutive weekly applications of a given product alternated with an application of Tricholife (*Trichoderma* sp.) @ 4g/L during a 10-week period against leaf spots in macadamia, at Réduit. Cuprofix showed the highest efficacy, achieving complete symptom disappearance within two weeks, followed by PF Control 83, which cleared symptoms in three weeks. Bionse and Winero also performed well, while Moringa had the least efficacy.

Milstop (potassium bicarbonate 85%) @ 2g/L and Winero (*Bacillus amyloliquifaciens*) @ 5mL/L compared to Problad Plus 20% (*Lupinus albus* extract) @10mL/L and Bionse (*Bacillus subtilis* and *Pseudomonas* sp) @ 5mL/L was evaluated against powdery mildew in cucumber. Milstop and Problad Plus were effective while Bionse and Winero provided moderate control.

Bioproducts Milstop (potassium bicarbonate 85%) @ 2g/L, Bionse (*Bacillus subtilis* and *Pseudomonas* sp) @ 5ml/L and Winero (*Bacillus amyloliquifaciens*) @ 5ml/L water was evaluated against powdery mildew disease on potted tomato plants and compared with the fungicide Folicur 250 EW (tebuconazole) @ 1ml/L. Folicur provided the best control with a severity score of 0.25, followed by Milstop (0.3). Bionse and Winero showed moderate control with severity scores of 0.45 and 0.5, respectively.

Consento SC 450 (propamocarb hydrochloride 375g/L and fenamidone 75g/L) and Zorvec 330 SE (oxathiapiprolin and famoxadone 33%) was evaluated against late blight on potato as stand-alone or in a spraying programme at Réduit and Wooton. At Réduit, Zorvec as a stand-alone gave the best control with a severity score of 0, while Consento alone and in combination had low severity scores of 0.2 and 0.3. At Wooton, Zorvec alone followed by Consento alone and Consento in a spraying program provided the best control with severity scores of 0.1, 0.3 and 0.3, respectively, compared to higher severity in untreated controls.

Nine synthetic fungicides namely Amistar top (azoxystrobin and difenoconazole) , Bellis (boscalid and pyraclostrobin) , Consento 450 SC (propamocarb hydrochloride and fenamidone), Folicur 250 EC (tebuconazole), Nativo 300 SC (tebuconazole and trifloxystrobin), Ortiva 250 EC (azoxystrobin), Ridomil Gold MZ 68 (mefenoxam and mancozeb), Score 250 EC (difenoconazole), Rovral FLO (iprodione) and the biofungicide, *T. atroviride* were evaluated against *S. vesicarium* on onion plants in the laboratory. Difenoconazole, boscalid, and pyraclostrobin showed sensitivity to the pathogen. *T. atroviride* exhibited high antagonistic activity with 70.1% to 84.1% inhibition of *S. vesicarium*, and its volatile metabolites significantly inhibited pathogen growth, making it a promising biocontrol agent.

### New Pathogens Detected

The following pathogens were detected and identified during the reporting period, *Colletotrichum salsolae* on papaya fruits, *Colletotrichum fructicola* on both papaya and macadamia and *Allexivirus* (Garlic viruses A and B) in the field on garlic and clove leaves, as well as in garlic bulbs under storage.

### Pest Management

Two natural enemies of tomato russet mite namely, the predatory mite *Amblyseius* sp. and the entomopathogenic fungus *Hirsutella* sp. were recovered. The predator *Nesidiocoris* sp. and the egg parasitoid, *Trichogramma chilonis* were recovered as natural enemies of *Tuta absoluta*.

Study on natural enemies of *T. absoluta* is being pursued. To this end, a colony of *T. absoluta* is being maintained in the laboratory. The use of light traps (Phoenix Insect Killer lamps) effectively reduced *T. absoluta* infestations in a tomato greenhouse, catching 153,094 moths over nine weeks. In comparison, pheromone traps caught only 63 male moths per week. The light traps, which averaged 8,505 moths per trap weekly and included 52.5% females, demonstrated their effectiveness as a valuable tool for managing *T. absoluta*.

Surveys were carried out to identify natural enemies of *H. armigera*. The predator *Nesidiocoris* sp., the larval parasitoid, *Campeletis chloridae* and the egg parasitoid, *Trichogramma chilonis* were recovered. A colony of the factitious host *Corcyra cephalonica*, is being maintained in the laboratory for provision of eggs as feed to natural enemies such as *Nesidiocoris* sp. and *Chrysoperla carnea*, and as host for the rearing of *T. chilonis*.

### Product Testing Against Pests

The efficacy of the following products was evaluated:

Milbectin (milbectin) @ 1 mL/L, Buprofezin (buprofezin) @ 1g/L, Fenomite (fenpyroximate) @ 1 mL/L, Pyribaden (pyridazinone) @ 1 mL/L, Ex-Meticide (azadiractin and datura extract) @ 1 mL/L, Terra Neem Biostar (karanja oil, neem oil, mahua oil, chilli extract eucalyptus extract) @ 5 mL/L, Maugreen (biopesticide soap) @ 20 mL/L, Greenmix (*Urtica* sp.) @ 6 mL/L and Celite 60 (diatomaceous earth) @ 20 g/L was tested against tomato russet mites in the laboratory. Vertimec (abamectin) @ 0.5 mL/L served as the standard pesticide and water as the control. All products were effective for the control of red spider mites.

Celite 60 (diatomaceous earth) @ 60 g/L, Wetcit Duo (orange oil) @ 2 ml/L, Terra Neem Biostar (karanja oil, neem oil, mahua oil, chilli extract eucalyptus extract) @ 5 ml/L, Neem Oil A Plus (azadirachtin) @ 3 ml/L, Vermiwash (liquid extract from vermicompost) @ 1 ml/L, Seaweed plus Neem Oil (seaweed extract and azadirachtin) @ 0.6 ml/L and Maugreen (biopesticide soap) @ 20 ml/L was evaluated against the leafhopper *Amrasca biguttula* on okra at Richelieu together with a control (no insecticide treatment) and a recommended insecticide, Flonicamid @ 0.2 g/L. Only Celite 60 was found to provide good control, Seaweed plus Neem Oil provided moderate control whereas the remaining biopesticides tested provided some control of *A. biguttula*.

Maugreen (biopesticide soap) @ 20 ml/L was evaluated against aphids, *Aphis gossypii* at Richelieu. The trial included a recommended insecticide, flonicamid @ 0.2 g/L and a control (no insecticide treatment). After two successive sprays carried out at 7-day interval, a reduction in *A. gossypii* population by 95.4 % and 100 % were recorded in Maugreen and flonicamid respectively.

Biofert BT (*Bacillus thuringiensis* local strain) @ 10ml/L, Biofert BT @15ml/L, Dipel (*Bacillus thuringiensis*) @ 2g/L was evaluated against DBM larvae on cabbage leaf discs in the laboratory. Spinosad @ 0.25g/L served as a standard insecticide and water as control. Biofert BT @ 15ml/L was found as effective as Dipel against DBM larvae.

### Insect as Feed: The Black Soldier Fly

The effect of different light sources on mating and oviposition in black soldier flies (BSF) was studied. High-intensity sunlight (20,000 lux) compared to other lighting systems (LED, halogen and fluorescent lights) yielded a higher percentage of fertile eggs (40%). In the other lighting systems, it varied from 3.5% to 15%.

The suitability of three diets (vegetable waste, pumpkin skin + semolina + chickpea flour and chicken mash) on the development of newly hatched BSF larvae was evaluated. Higher pupal weight was recorded in chicken mash indicating its suitability as a diet for the rearing of breeding BSF stock.

## Livestock Research and Development

The Livestock Research Department maintained its activities aiming at increasing production and productivity through improved nutrition and reproduction, conservation and utilisation of animal genetic resources, value addition and waste management. Research activities focussed on climate smart livestock production practices with emphasis on crop-livestock integrated systems

### ANIMAL NUTRITION AND MANAGEMENT

Nutritional studies were carried out to evaluate wheat bran as an alternative feed to “dairy trial” concentrate to enhance cattle production. Feeding trials, which spanned over a period of 178 days, showed that wheat bran alone cannot substitute “dairy trial” concentrate in the diet of growing cattle.

In view of promoting home grown protein-rich fodder species, as a substitute to costly concentrate in the diet of rabbits, a feeding trial was carried out to compare the use of *Calliandra calothyrsus* with concentrate on average daily gain (ADG). Significantly higher ADG (18 g vs 11 g) was obtained with *C calothyrsus* compared to feeding of concentrate.

The use of milk replacers usually incurs lower costs compared to feeding whole milk to calves. A study carried out to compare two different commercial milk replacers in calf feeding showed that “cremoelevage” gives better ADG (539 g vs 442 g) than “Newean Pro”. Cost-benefit analysis showed that for each kg liveweight gained during the pre-weaning stage, the milk replacer “Cremoelevage” cost MUR 173 compared to MUR 273 for “Newean Pro”.

### FODDER RESEARCH AND DEVELOPMENT

Research on fodder was pursued with the assessment of the productivity and nutritive value of three different sweet potato vines under two different agro climatic conditions and the assessment of partial replacement of chemical fertilisers by cattle manure on biomass production of maize. The forage diversity in the fodder germplasm collection at Curepipe Livestock Research Station (CLRS) was further consolidated for use as cover crops or integrated with other fodder species and in cropping systems. The germplasm collection is made up of some 32 fodder, legume and tree species and actions have been initiated for the introduction of new fodder species and varieties for assessment under local conditions. Species are propagated for large-scale cultivation and for dissemination to farmers to promote fodder production.

Activities within the project which aims at promoting fodder development for improved livestock production is ongoing at CLRS and Richelieu Crop Research Station (CRS) with the propagation of planting material in the newly constructed nursery at CLRS for the establishment of fodder plots. High protein leaf meal was prepared from harvested leaves from tree species. Material was also harvested from established perennial fodder species such as Lucerne grass and Rhodes grass. Box baler was fabricated as a simple technology for baling of hay and the silage press machine was redesigned for drum and bag silage making (Figure 32). The Near Infra-Red (NIR) spectroscopy technology is now being used to assess the nutritive value of fodder and hay.



Figure 32: Wrapped baled hay (left), acacia leaf meal wrapped baled hay (middle) and vacuum sealer for hay packing (right)

## MILK QUALITY, VALUE ADDITION AND FOOD SAFETY

### Monitoring Sub-Clinical Mastitis

The incidence of sub-clinical mastitis, which affects milk quality and yield in dairy cows, was monitored at CLRS. A locally formulated test kit (Figure 33) has been developed for screening sub-clinical mastitis and a solution comprising 0.5 % active iodine solution was used as post milking teat dip as control measure. It was found that the incidence of sub clinical mastitis decreased from 76 % in 2023 to 52 % in the second quarter of 2024.



Figure 33: CMT test kit

### Milk Processing

Within activities to promote value addition in fresh milk, three training sessions on milk processing were held at Mapou Processing Unit and were attended by 42 trainees. The protocol for the preparation of ice cream using fresh milk is being fine-tuned.

### Pig carcass and meat quality assessment of locally produced pigs

To assist pig farmers in improving the quality of pig produced locally and meet the requirements of the processors and exigencies of consumers, the services of a consulting firm, *IFIP-Institut de Porc from FRANCE*, were sought for capacity building (Figure 34). An assessment of the quality of pig produced locally was carried out and a grading system was proposed. Twenty-one participants attended the training, and a half-day validation workshop was held. The “Cahier de Charges on Elevage de Porc.” is being updated considering new knowledge acquired and a booklet on pork quality is under preparation.



Figure 34: Capacity building on pig carcass and meat quality assessment

### Carcass yield of slaughtered cattle at the Mauritius Meat Authority (MMA)

To assist the government in its decision for the fixing of the selling price of imported live beef cattle for ‘Qurbani’, a mechanism has been set which comprises, *inter alia*, the estimation of dressing percentage, also

referred to as carcass yield. An exercise was carried out, whereby the liveweight of the animals to be slaughtered was measured (Figure 35) and their respective carcass weight were obtained from the MMA. The mean liveweight was 473 kg and the mean carcass weight was 264 kg, thus giving a dressing percentage of 56% which is in line with the quoted figures in the literature.



Figure 35: Weighing of beef cattle at Socovia

## ANIMAL GENETIC RESOURCES

### Conservation of Creole Cattle

The activities for the conservation of 'Creole' cattle initiated under the AU-IBAR funded project "Conservation and utilisation of the critically endangered Creole cattle in Mauritius" has been expanded with the establishment of a fifth unit. The total heads stood at 44 comprising 30 heads at CLRS (*ex-situ*) and 14 heads *in-situ* (Figure 36). The project on conservation of genetic resources benefitted from the support of a consultant from Stellenbosch University, South Africa who assisted in the development of an Open Nucleus Breeding Scheme as part of the conservation strategy for local goats.



Figure 36: *In Situ* Creole Cattle

### Performance of progenies of imported Holstein-Friesian dairy animals

The evaluation of the performance of progenies of imported Holstein-Friesian dairy cattle breed imported in 2014-2015 from South Africa was pursued and results showed that the progenies have better milk production and reproductive performance than their parents under local conditions. The average milk production over the first 305 days was 11.7 L/day for the imported animals compared to 13.4 L/day for the progenies. Similarly, for the reproductive parameters, the progenies outperformed the parents in terms of calving interval, calving to 1<sup>st</sup> service and interservice period.

### Performance of Local and imported Boer goats and crossbred goats in Mauritius

The Local goat breed is regarded as less productive and therefore subjected to replacement and cross-breeding with imported breeds such as Boer. Phenotypic characterization of the parents was completed and that of the progenies was initiated.

In view of developing a genetic improvement programme for better carcass weight, performance evaluation of goats of local, Boer and crossbred breeds is underway, at CLRS, to determine their productive and reproductive performance. Twenty-seven adult goats, comprising pure line breeding of Local goats, pure line breeding of Boer goats and crossbreeding of Local with Boer are being monitored. A total of 28 kiddings comprising eight from the local, eight from local Boer crossbred and 12 from Boer breed were obtained. Local, local and Boer crossbred and Boer breed had a litter size of 1.6, 1.8 and 1.7 respectively indicating the existence of multiple births and good reproductive potential of the does in the three groups of animals.

Goat improvement programme for dairy goats has been initiated in view of promoting dairy goat production and product development from goat's milk. Awareness was raised on the benefits and value addition of goat milk during the Agri Entrepreneurship week held by FAREI from 15-18 November 2023. In view of opportunities identified for a niche market, a project titled "Support for the promotion of dairy goat milk production for contribution to food security, nutrition, and livelihood" was submitted and approved for funding, to the tune of USD 267,000, by the FAO under TCP/MAR/3904.

## SUSTAINABLE LIVESTOCK PRODUCTION

### Setting up of Silvopastoral Production system at Petit Merlo

The setting up of a silvopastoral production system at Petit Merlo is on-going to demonstrate sustainable practices based on the integration of trees, pastures, fodder and livestock within the existing vegetation. On-going studies and activities initiated include the following: production profile and nutritional composition of Herbe d'argent (*Ischaemum aristatum*) and Herbe Creole (*Paspalum conjugatum*) as naturally growing pastures, profiling of the vegetation biodiversity and identification of naturally growing species having beneficial properties for livestock. Small fodder plots and pastures with different species including leguminous were also planted.

### Supporting Climate Change Adaptation for Communities Through Integrated Soil–Cropping–Livestock Production Systems (AFRA) (RAF5090)

The project being implemented at Petit Merlo, CLRS and Richelieu CRS has as its objective to promote the concept of climate-smart practices through integrated tree-crop-livestock production systems for improving soil fertility, livestock and crop production. The land has been cleared at Petit Merlo and CLRS for the setting up of a tree-crop-pasture system.

### Performance assessment of goats and sheep using the LASER2 software as a tool for livestock data management (DeSIRA)

The LASER2 software, which has been developed by CIRAD, France, is being used on the two livestock stations of FAREI and on 13 goat farms for monitoring the performance of animals for goat and sheep production. A total of 297 goats and 54 sheep were monitored on farm and activities involved animal tagging, herd inventory, data recording on herd dynamics and data entry for analysis by the LASER2 software. Farmers (Figure 37) and Extension Officers were trained on data collection and the recording in the 'herd book'. The mobile app MoFarm was developed through the collaboration of the Mauritius Digital Promotion Agency (MDPA) to assist farmers in capturing information on kiddings.



Figure 37: Farmer participating in the project

### Promoting Climate Smart Agriculture Concepts among small livestock holders in the Republic of Mauritius under GCCA+ (EU-funded project)

In view of increasing the resilience of small livestock holders and contributing to sustainable livelihood and food security, two consultants were recruited under the GCCA+ (EU-funded) project “Promoting Climate Smart Agriculture Concepts among small livestock holders in the Republic of Mauritius”.

Thirty livestock stakeholders were trained in smart agriculture practices and were exposed to adapted Climate Change technologies and practices to ensure the sustainability of their production systems. A vulnerability assessment report for the livestock sector and a Portfolio of best practices, technologies adaptations and/or innovations were submitted. Recommendations for policy measures to improve the resilience of the livestock sector were incorporated in the “Road Map and Strategic Plan 2024-2030 for Non-Sugar Crop and Livestock Sector” of the Ministry of Agro-Industry and Food Security.

### Setting-up of Small livestock - Rearing Units

Equipment was procured to set up breeding and rearing units for local chicken, quails and rabbits, (Figure 38) respectively, in view of strengthening the infrastructural facilities on the BMRS and the Plaisance MF of FAREI. These include three rabbit hutches cages fitted with feeders and drinkers, two cages for quails and three electric egg incubators. The breeding units will serve to showcase the basic equipment required for small livestock production and will also contribute to the production of breeding stock that can be made available to local farmers and to promote backyard production.



Figure 38: Turkey unit (left), quail unit (right) and rabbit unit (right)

### Setting up of pilot Biogas Demonstration plant at CLRS

Within the Switch Africa Green Project “Setting up of pilot Biogas Demonstration plant for the production of electricity” funded by the UNEP, the construction of a 15 m<sup>3</sup> concrete WASAZA fixed dome biodigester was completed at CLRS (Figure 39). The project, which has been implemented with the collaboration of the Ministry of Environment, Solid Waste Management and Climate Change and Ghana Cleaner National Production Centre (GNPC), benefitted from the assistance of Ghanaian experts. The biodigester will be initially used as a demonstration plant and in a second instance, for the generation of electricity.



Figure 39: Wasaza fixed dome biodigester at Curepipe LRS

## Extension and Training Department

Agricultural extension is crucial for bridging the gap between research and practical application in farming communities. By disseminating up-to-date knowledge, techniques, and technologies, agricultural extension services empower farmers to enhance productivity, improve crop quality, and adopt sustainable practices. This direct support helps in addressing local challenges, such as pest management, soil health, and efficient water use, leading to increased food security and economic stability. Moreover, extension services foster innovation by integrating community feedback into research, thus driving continuous improvement in agricultural practices and resilience against environmental changes.

### CROP EXTENSION

As per recent years, the major thrusts in the Crop Extension Division were to promote sustainable management practices such as good agricultural practices, adopting more climate smart agriculture methods, with the objective of minimising the usage of chemical fertiliser and pesticides. The extension department also aimed in encouraging the use of biopesticides especially in green vegetables for producing food crops which are safer for consumption. The adoption of agro ecological approaches remained crucial within an integrated approach towards a sustainable development.

There is an estimated acreage of 6031 ha under vegetable production involving 11 280 planters and 1210 ha under orchard production concerning 1654 planters. There has been substantial development in the field of Greenhouses/Hydroponics, where there is actually a total area of 806 047 m<sup>2</sup> (1895 Units) involving 1034 planters. There are 93 planters cultivating vegetables under 164 units over an area of 141 396 (m<sup>2</sup>) under protected culture (net houses). 72 planters are producing ornamentals under protected structures over a total area of 368 897 m<sup>2</sup>.

Extension activities as from July 2023 to June 2024 stands as follows: A total of 16,250 advisory visits were effected and 20,252 office calls from farmers have been recorded. A total of 224 extension activities were organised and were attended by 2939 farmers/entrepreneurs. The crop extension department organized 96 group meetings based on 11 themes (annex 1) for 1083 planters, 41 field demonstrations on eight themes attended by 446 planters and 38 conducted tours on seven themes with 529 planters. A total of 49 MQA approved training courses was completed and was attended by 881 trainees. To ensure sustainability for foodcrop production these major themes were undertaken through our different extension activities.



Figure 40: Demonstration on IPM at Carreau Lalianne

The crop extension department has been mandated to provide technical support and training to farmers in order to ensure sustainability in food crop production. The increasing cost of production, lack of labour and climate change remained among the most challenging problems for the farming community. Request for work permits for foreign skilled labour are being considered and processed at a priority level. There is a need for a paradigm shift in order to achieve an economic viability in the agricultural sector.

The crop extension department at the Riviere des Anguilles MF, Plaisance DC and Mapou MF are now equipped with a small meteorological station relaying weather parameters with the capacity in predicting, crop water requirements and potential pest attacks & crop diseases incidences.

Information such as soil water moisture content, and weather parameters will definitively be helping in decision making process for irrigation purposes and application of appropriate phytosanitary products in due time. Extension officers are accessing and making use of this technology and advising the planters community accordingly.

In addition, all the agricultural schemes pertaining to FAREI were implemented. The Flacq and Rivière des Anguilles Model Farms served as models for organic foodcrop production.

Our food crop sector has been facing numerous challenges and the crop extension department designed tailor made agricultural programs for addressing the same. The major themes undertaken were as follows:

### **Relief Schemes**

During the year 2024, Mauritius was affected by the cyclone Belal and persistent and heavy rainfall affecting the foodcrop sector. Rehabilitation scheme was devised where seeds were distributed freely to registered farmers across the island. The sheltered farming – repair of structure and plastic/net/ replacement scheme was implemented in order to restore damaged tunnels. It covered costs of plastic and insect net replacement along with repairing structural damages. Strategic crops such as onions were part of the distribution scheme. Only planters whose took advantage of the crop insurance scheme at the SFWF were compensated.

### **LIVESTOCK EXTENSION**

The Livestock Extension Division provides services to operators in the livestock sector to improve livestock production and productivity through training (group meetings, conducted tours, demonstrations) and advisory field visits. Training in different livestock sectors (cattle, goat, pig and poultry) was maintained for livestock keepers and others. Technical assistance was provided to entrepreneurs for writing up of their livestock projects. Applications for grants under the schemes for 'Modernisation and Innovation in the Food Crop and Livestock sectors' were processed and evaluated by FSF Evaluation committee. National projects such as milk village, fodder production, multiplier goat farm, MSPA land projects, cooperative pig farms and other livestock projects were also monitored. Regular meetings were attended at the different sectoral Committees. Extension continued to act as an interface with other stakeholders such as DBM, LFPS, DVS, SFWF, Statistics Mauritius, MOESW&CC, Ministry of Industrial Development, SMEs and Cooperatives, Ministry of Labour and Local Authorities with respect to loan, subsidised livestock feed, veterinary services, breeder's card, environment issues as well as application for work permit respectively. Extension also maintained its collaboration with the Research Department on livestock projects. Under APMIS, livestock data were updated with resources available.

### Livestock Statistics

As at June 2024, the livestock population and corresponding farmers comprise 4,263 cattle (458 farmers), 24,160 goats (1,822 farmers), 5,429 sheep (431 farmers), 22,956 pigs (449 farmers), 5,459 ducks (278 farmers), 1,746,118 broilers (343 farmers), 443,079 layers (122 farmers) and 1,342 rabbits (125 farmers).

### Training of farmers at Model farms and other venues

Training was conducted for farmers through MQA certified training courses along with other extension activities. 17 meetings, 8 conducted tours and 38 demonstrations were organized and attended by a total of 429 farmers. 19 training courses (MQA approved) were effected, namely on goat production, egg production, broiler production, duck production, piglet production, operation of a dairy farm, farm management and quail production with 295 participants.



Figure 41: Visit to Belle Mare Research Station

### Other Services

Livestock Extension supported the livestock farmer's community by processing applications for animal (72), feed (186), molasses (62), bagasse (39), bona fide for DBM & NTA permit (20) and effected 5083 advisory individual field visits. 1085 persons called at Extension offices for support and advice.

### TRAINING AND INFORMATION

This division comprises three distinct units dealing respectively with matters pertaining to information, training in addition to initiation of Women & Youths to the field of food production agriculture. The latter one being especially dedicated to encouraging venture of women and other younger section of the population in primary agriculture, or otherwise, moving higher up in the value chain with development of agro-processing enterprises.

Six presentations attended by 329 officers were made by local or visiting experts to broaden exposure of personnel of the institute to novel as well as emerging technologies.

The Training Unit provided assistance in terms of invitations, coordination, logistics and preparation of training material as well as deployment of resource persons in support to the various training activities. Number of attendance certificates issued to trainees totalled 1476.

Interest in training kept on its rising pace with 1,717 applications received from members of the farming community as well as the general public expressing needs for knowledge enhancement on subjects related in particular to crop production, sheltered farming, home gardening, livestock rearing and mushroom cultivation.

### Office Call and Information Dissemination

A total of 385 calls for advice were attended and 777 publications issued on request to farmers, general public and stakeholder institutions.

One hundred and twenty-nine radio talks and 2 Television programmes on agriculture related subjects were broadcasted for general public and farmers in particular. This service provides timely information on latest farming techniques especially to farmers actively engaged in crop and livestock production.

Five alerts were sent by SMS to avert a total of 801 farmers registered to this service. SMS contained information on anthracnose, powdery mildew and late blight in solanaceous crops.

Nineteen publications were processed carried out during this period.

### WOMEN AND YOUTH

Thirty-five Agricultural Clubs, with a total membership strength of 919 were registered with FAREI for support and assistance during period under review.

Nine (9) Agricultural Entrepreneur Clubs (AEC) representing a forum of 170 agro-entrepreneurs all actively engaged in commercial scale farming. Training activities and technical support were dispensed to leverage individual capability in the field of backyard gardening, foodcrop/flower/livestock/ mushroom production, compost making, plant propagation, irrigation and agro-processing techniques; and 8 Agricultural Women Clubs regrouping a total of 136 active members.

Seven training courses dispensed to leverage knowledge and capacity of 134 potential entrepreneurs in agro-processing techniques.

Thirteen agro-entrepreneurs entertained at the Agro-Processing Resource Centre in Wooton for testing and evaluation of their respective technical process as well as end products and 10 conducted tours organized for 128 visitors.

Sixteen agri-business enterprises benefitted free advisory services on process and product improvement; 156 protocols developed or upgraded for processed food products.

## TECHNICAL SUPPORT

### Biofarming Unit

The Biofarming Unit focused on promoting farming as per organic principles and other sustainable practices through training, advisory visits, sensitisation meetings, development projects at the community level and promotion of organic produce. The Unit gave support to some 172 farmers across the island (Britannia Organic Zone, the Ferney AgriHub and Permaculture farms found at Bambous Virieux, Deux Bras and L'Esperance Quartier Militaire) through regular field visits and extension support.

### Organic Household Gardening Project

The project is implemented within the National Strategic Plan for Organic Farming 2017-2027 to create public awareness of the benefits of organic production and the harmful effects of chemical-based farming. Training was provided in backyard organic gardening to participants from different localities. The main topics covered were the importance of setting up a kitchen garden as per organic principles, soil fertility management, basic gardening practices, compost making, non-chemical pest and disease management and container gardening. Participants who complete two training modules receive a start-up kit (hand tool, garden basket, seedling tray, pack of vegetable seeds and watering can) to establish their gardens. Organic household gardening project was held in Ste Croix, Cite L'Oiseau, Dagotiere, Petite Riviere, Chamouny, Bambous Virieux, Caroline and St Hilaire and 219 persons benefitted from the project.

### Collaboration with Agrisud

The Biofarming Unit is collaborating with Agrisud, a French non-profit, on the Green Farmers Program, which supports small family farms near Club Med villages. This partnership aims to create local, responsible supply chains for fresh fruits and vegetables. In Mauritius, farmers are supplying the Club Med villages of La Pointe aux Cannoniers and Albion weekly. The Biofarming Unit is assisting six farms in improving their agro-ecological techniques to enhance productivity, diversity, and quality through advisory visits and training.

### Subash Palekar Natural Farming Project (SPNF)

The promotion of SPNF natural farming systems included sensitization meetings for 93 farmers to explain its concepts and benefits. Cow urine and cow dung are supplied bi-weekly to Ferney Hub, Flacq Model Farm, and Mapou DC, serving as collection points for 51 farmers to prepare Jeevamritam, a natural soil enricher. Field results are promising, and the Mapou Model Farm is converting to natural farming using SPNF techniques. Two new distribution points are planned for Rivière des Anguilles DC and Plaisance DC aimed at serving farmers in nearby regions. Distribution points at Rivière des Anguilles DC and Plaisance DC have been earmarked to cater for farmers in the region of Camp



Figure 42: Demonstration of preparation of Jeevamritam preparation

Diable, Tyack, Plaine Magnien, Plaisance Land settlement and Mare D'Albert. Some 43 new farmers have already been sensitized. A demonstration of Jeevamritam preparation was also conducted. Figure 42),

The Mapou Model Farm is also in the process of being converted to a natural farm using SPNF techniques.

### Workshop on Organic Sector

An inception workshop on “Value Chain Analysis of the Organic Sector” was held on the 26th September 2023. One hundred participants including the main actors of the sector attended the workshop.

### Compost Day at Pamplemousses Organic Research Station

Under the DeSira Project, a compost shed was constructed at Pamplemousses Organic Research Station (PORS) and a compost day was organised mainly for organic farmers from the North/East in July 2023. The compost day consisted of a training in compost making and a practical session at PORS (Figure 43).



Figure 43: Demonstration on composting at the Pamplemousses Organic Research Station

### Collaboration with SICOM

FAREI is also engaged with the SICOM Group for the promotion of organic farming in Mauritius and activities during the year included preparation of a video on “Benefits of Bio Production”, organisation of an expo sale for the promotion of organic products from farmers, funding of a small bio farm at Wooton Farmers Training School and funding for a small bio farm for “Autisme Maurice”.

An Expo sale was held on 5 June 2024 and received a good response from the public (Figure 44). FAREI was also involved in the setting up of a roof top garden at SICOM Tower in Port Louis while 70 Staff of the SICOM Group were sensitized on backyard gardening and composting.



Figure 44: Expo sale for promotion of organic produce

Other activities carried out to sensitize on biofarming are:

- Three group sensitisation meetings attended by 40 participants
- Six MQA approved training on organic crop production attended by 148 participants
- 268 advisory visits
- 13 demonstrations attended by 203 participants
- Seven talks attended by 705 participants
- Six conducted tours attended by 158 participants.



Figure 45: Training on biofarming

### Biometry and Statistics Division

The Biometry and Statistics Division (BSD) is staffed with a Principal Biometrician and a Biometrician. They assist research departments and divisions in developing research protocols, designing and laying out experiments and field trials, analyzing data and interpreting results while Extension staff are empowered to conduct surveys and field assessments.

Food crop statistics were generated by the BSD on a monthly basis from ongoing surveys conducted by the extension staff and from data provided by the Mauritius Chamber of Agriculture for the corporate sector. Monthly food crops statistics for open field and protected cultures were provided to Statistics Mauritius, quarterly, for compiling the Economic and Social Indicator (ESI) on 'National Accounts'. The BSD also provided annual food crop statistics broken down by month and district for both open field and protected cultures to Statistics Mauritius for the Digest of Agricultural Statistics. Food crop statistics were also shared with other institutions and stakeholders upon request as well as with FAREI technical cadres. During calamity periods, such as cyclone Belal that hit the island in February 2024, food crop production was thoroughly analysed to forecast for importation to ensure food security in the country.

During the reporting period, retail and wholesale market data of food crops were verified, compiled and generated. Price data regularly collected at four different markets namely at Port-Louis, Vacoas, Flacq and National Wholesale Market in Wooton by Extension staff were captured in a database managed by the BSD.

Besides data generated by the division, statistics from other Institutions including imports data, meteo data were shared to the staff of FAREI. It also shared data with the Agricultural Planning and Policy Unit of the parent Ministry in the preparation of the Strategic Plan 2024-2030 for non-sugar crop and livestock sectors.

The BSD also contributed in the 'Vulnerability Assessment and Analysis' (VAA) in the Agricultural Sector in 2023. The findings of this study were analysed and compiled in a detailed report highlighting farmer's areas of vulnerabilities. The final report was submitted to the SADC in July 2023 and the findings were disseminated through a Virtual Regional VAA meeting in July 2023.

### Business Development Unit

Key activities during the financial year included the provision of information, advisory service and business facilitation advice as well as technical assistance for the preparation of appropriate business plans for prospective entrepreneurs.

The Business Development Unit (BDU) was actively involved in the implementation of numerous schemes provided by the government including, Sheltered Farming, Plastic Replacement, Purchase of Agricultural / Processing Equipment, Rainwater Harvesting, Acquisition of CCTV Camera, Purchase of Imported Quality Planting Materials, Micro-propagation, Fruit Ripening Equipment, Solar Powered Cold Room, Goat and Sheep Breeding, Cattle Breeding/Calf Purchase, Pig Breeding, Upgrading of Livestock Farm, Pasture Development, Compost Making, Fruit Protection, Banana Bagging and Aquaponic Household Gardening, to enable crop and livestock farmers improving their production and productivity.

Mainly fruit and vegetable growers, breeders, beekeepers and agro-processors, who operate in the agro-industrial sector and meet the eligibility criteria were concerned. For the financial year 2023/2024, 471 projects were approved for a grant amount of MUR 79,912,066. By June 2024, 810 beneficiaries were eligible to the various schemes, including those eligible under the Plastic/Net Replacement Scheme following cyclones Freddy and Belal that hit Mauritius in 2023 and 2024 respectively.

Site visits were carried out twice monthly after full disbursement of funds to the beneficiaries in order to ensure proper implementation of the projects.

During the current financial year, a total of 501 applications in connection with requests for agricultural State Land were received and evaluated, out of which 155 were recommended to the Ministry of Agro Industry and Food Security. A total of 413 potential agri-entrepreneurs in food crop and livestock production were assisted in project writing during 17 working sessions.

During the current year, 71 applications for bank loans under the Biotechnology Loan Scheme and Women Entrepreneur Scheme were also processed and 58 applications were recommended for loans by the Development Bank of Mauritius.

### Economics Unit

Support was extended to the Foodsec Semence Project, Seaweed Composting Project and the Regional Vulnerability Assessment Project. Assistance was also provided to different organisations in relation to advisory, policy formulation and sharing of views on business and international trade issues together with the support of the parent Ministry, RBSE, AMB and SFWF. The farming community was also assisted through the calculation of damage and compensation estimates in connection with land acquisition by the government and in the preparation of the economics of a litchi enterprise and the litchi manual. The study on hydroponics enterprise viability was completed in March 2024. This study revealed that above 75 % of respondents had viable hydroponic enterprises while the remaining 25 % reported that hydroponic was not so profitable due to very high operational costs, labour shortage, industry saturation, climate change and very high competition. 75 % of respondents also reported that they would not have been able to set up and run their hydroponic enterprises without Government support schemes. The study also revealed that there is no association between the hydroponic farm size and farm profitability. A cross-tabulation analysis revealed that the optimal farm size lies between 500 – 1000 m<sup>2</sup> for optimised farm profitability.

## Engineering Division

The engineering division is primarily engaged in providing technical support for the implementation of Research and Development projects. This includes designing and preparing scopes of work for infrastructural projects and specifying requirements for equipment procurement. The division also supports local agricultural operators in areas such as hydroponics, sheltered farming, rainwater harvesting systems, *inter alia*.

During the period under review, support was provided to the National Wholesale Market for the design of a composting facility for green waste generated from their daily activity, while assistance was given to farmers for design, preparation of specifications, scope of work and CAD drawings for greenhouses construction in Rodrigues Island.

For the extension of the building at Réduit and the new buildings under construction at Wooton (Phase I and II), work was monitored and fortnightly coordination meetings were attended. In addition, engineering support was provided for the implementation of various projects:

<b>EU-funded DeSIRA Project:</b>	Provided technical specifications for equipment procured.
<b>Farmers schemes:</b>	Evaluated applications from farmers for various schemes and DBM applications.
<b>Farm relocation compensation:</b>	Evaluated assets to compensate farmers displaced by the construction of 12,000 residential units at La Brasserie.
<b>Irrigation systems:</b>	Prepared scope of work for installing borehole pumps and drip irrigation at Richelieu Crop Research Station.
<b>Solar photovoltaic system:</b>	Designed, prepared specifications, and implemented a solar photovoltaic system for the silvopastoral project at Petit Merlo.
<b>Infrastructural work:</b>	Designed, prepared specifications, scope of work, CAD drawings, and implemented a composting unit for seaweed at Belle Mare Research Station, and block wall fencing at Richelieu Crop Research Station, amongst others.
<b>Vehicle maintenance:</b>	Assisted the Transport Section with the repair and maintenance of FAREI vehicles.
<b>Booklet:</b>	Assisted in preparing a booklet on 'Heat Management in Greenhouses'.
<b>Supplier registration:</b>	Prepared specifications for the registration of suppliers under the aquaponic scheme.
<b>Agri-voltaic scheme:</b>	Assisted the Central Electricity Board to establish an agri-voltaic scheme.
<b>Greenhouse technology:</b>	Offered technical advice to six promoters in greenhouse technology.

The engineering division remains committed to supporting and empowering the agricultural sector through engineering solutions and technical expertise.

## IT Section

FAREI relies heavily on information technology to efficiently manage its operations, data, and communication. The IT Section plays a pivotal role in innovation and technology adoption aimed at advancing agricultural research, and extension services. It is responsible for maintaining and upgrading the institute's computer systems, software, and network infrastructure, ensuring FAREI's employees' access to the necessary tools and resources.

During the year, the IT Section assisted in the deployment of the 'Research and Extension Key Information Repository (REKIR) system to manage research, extension, laboratories and station activities within the Institute. This digital platform serves as a centralized hub for storing, organizing, and sharing valuable information related to agricultural research, extension services, and best practices.

Key features of the e-repository system include:

- Automating and managing various schemes and services such as field visits in connection with duty exemption, work permits, complaints, office calls and loan schemes;
- Facilitating the management of nurseries, seed production, and tissue culture processes;
- Supporting research activities by managing work programs, land requirements, material requests, on-farm and on-station trials, and generating reports;
- Providing a training management system to plan, schedule, and track training activities across divisions,
- Enabling collaboration between research, extension, and other stakeholders through a centralised platform; and
- Improving efficiency, data accuracy, and accessibility of agricultural information for better decision-making and service delivery.

The implementation of the platform progressed through handholding sessions that were held with different departments/sections. These sessions allowed users to become familiar with the repository system's features, interface, and functionalities. This familiarity enhances their confidence in using the system effectively. When users feel supported and confident, they are more likely to actively contribute and use the system over time.

Another online platform, 'TaMIS', developed by State Informatic Limited (SIL), that provides for a fully integrated Human Resources (HR) and Payroll system, was also implemented during the year. TaMIS was tested and validated by the staff of the HR and Finance Section, and the system went live in the production environment on 28 June 2024.

A trading platform, the "Bazar Moris", an initiative of the Government of Mauritius operated by the FAREI together with other partners, was also initiated. This e-commerce marketplace aims to provide a modern digital trading facility for perishable agricultural produce including vegetables, fruits and dairy products to the farming community, wholesalers, retailers, transformers, delivery service operators and consumers among others.

A bid was launched for the Supply, Delivery, Testing and Commissioning of a Mobile Solution for a Farmer Information Delivery System (FIDS). The FIDS is being implemented to empower and support the farming community in Mauritius with timely, precise and quality information on production, market prices and other relevant agricultural guidance and will replace the existing MoKaro and APMIS systems that are outdated.

The platform will diffuse Information on efficient agricultural planning, new cultivation, production status, market prices, livestock, alerts, news, and various other support services to enable farmers to optimise resource use, capitalise on production opportunities, secure market share, a ensure steady supply, and generate sufficient revenue.

### **Procurement Section**

The Procurement Section is an integral part of the FAREI playing a crucial role in the acquisition of goods and services. It ensures obtaining quality goods and services at competitive prices and in the most effective and efficient ways possible and in accordance with the Public Procurement Act 2006. The methodology used for the procurement of goods, services and works is based on the estimated cost.

Most recently, the threshold for 'Direct Procurement' has been amended and also 'Informal Quotation' has been replaced by 'Low Value Procurement'. During the reporting period, 86 bidding exercises were conducted both manually and through the e-procurement system. Expenditure for procurement for the same period amounted to MUR 103,030,643.72.

### **Safety and Health**

In line with its commitment to provide a safe working environment for all its employees, efforts were made to continuously improve working conditions through a participatory approach. Eleven fire drills were conducted in our Buildings and Laboratories. Four meetings of the health and safety committee were conducted.

With the development of a new site at Petit Merlot, advice was given on health and safety issues before the site can function to its full capacity. All issues are being addressed through meetings between all stakeholders to ensure the site is safe for employees and visitors.

Safety Audits are conducted regularly to minimize risks. Twelve Toolbox talk were conducted on stations and a PowerPoint presentation on health and safety was presented to new recruits in order to provide them with an understanding of the working environment. The objective is to minimise risks and health hazards in the workplace through regular risk assessments and low levels of exposure to hazardous environments. FAREI endeavours to ensure that proper communication take place between the employer and employees to enforce safety and health procedures.

## DeSIRA INITIATIVE

The EU-funded project "Enhancing FAREI's Research and Development Capacities," under the DeSIRA Initiative in November 2019, successfully concluded on 19 November 2023, following a one-year extension. This project significantly enhanced the capabilities of FAREI, benefiting research stations, model farms, demonstration centres, and laboratories.

The activities focused on research and capacity building resulted in the development of a new research programme on agroforestry and the re-orientation of six research programmes namely; introduction and evaluation of new crops and varieties; enhancing breeding for the development of new crop varieties tolerant to biotic and abiotic factors; introduction and testing of novel climate-smart technologies; development of sustainable production practices; integrated pest and disease management and feed and fodder management.

New research facilities have been set up comprising a Model Agroforestry plot at Britannia, a soil, water and plant laboratory at Wooton CRS, a biological rearing facility at Réduit, a post-harvest and agro-processing unit at Mapou Model Farm and a small livestock research unit at Belle Mare Research Station. In addition, ten research facilities have been upgraded.

Seventy-four research and extension officers benefitted from capacity-building programmes comprising training abroad, consultations with experts and participation in international symposiums. The research was successfully carried out with positive outcomes such as the adoption of cahier des charges for pig production and improvement in pork quality, production of button mushroom, use of IPM for control of major pests in crucifers and reduction in use of pesticides, use of water and energy saving technologies for irrigation.

FAREI's extension department was strengthened through the provision of Information Communication Technology (ICT) tools and training to ensure that Information flow and dissemination were improved. The extension capacity was further strengthened in the use of climate-smart technology such as the use of sensors in drip irrigation systems, and I-metos stations for weather forecasting and disease alerts.

During the implementation of the project, five trainings were carried out; nine field demonstrations were held in the field of farmers; four workshops were organised; four public presentations were delivered by visiting consultants; three public talks were delivered by research staff and six booklets were produced.

At the community level, the needs and problems of farmers were addressed through the provision of soil and water test services and capacitation on integrated pest and disease management and income-improving techniques without compromising the natural resource base.

An Agro-Entrepreneurship Week comprising presentations on research works which have good scope for entrepreneurial activities and an exhibition/sales event was organised from the 15 to the 18 November 2023. Business angels and start-ups who have benefited from support from such opportunities shared their experience. The event has enabled agro-entrepreneurs and start-up to enhance their understanding on exigencies of the business environment, facilitate their integration in the supply and value chains of the key players in the non-sugar sector and provide a platform to showcase innovative ideas and products to the business community and the public in general.

FAREI's knowledge repository platform was developed and is functional. It has enabled the FAREI to kickstart its digitalisation process and is meant to improve information flow within and outside the organisation.

The narrative and financial report was submitted to the EU in May 2024.

### Project closure

At the project closure the following key objectives were achieved:

- **Enhancing FAREI's Research and Development Capacities**

#### Research and Capacity Building:

Developed a new agroforestry research programme and reoriented six others focusing on crop variety evaluation, climate-smart technologies, sustainable practices, pest management, and feed management.

#### Infrastructure Development:

Established new facilities: Model Agroforestry plot at Britannia, a soil, water, and plant lab at Wooton CRS, a biological rearing facility at Réduit, a post-harvest unit at Mapou Model Farm, and a livestock research unit at Belle Mare Research Station. Upgraded ten existing research facilities.

#### Capacity Building for Staff:

74 research and extension officers received international training, expert consultations, and participated in global symposiums.

Key research outcomes included improved pork quality through new pig production standards, successful button mushroom production, reduced pesticide use via IPM in crucifers, and the adoption of water and energy-saving irrigation technologies.

#### Enhanced Extension Services:

Strengthened ICT capabilities in the extension department, improving information flow and dissemination.

Trained officers in the use of climate-smart technologies like drip irrigation sensors and weather forecasting tools.

- **Community Engagement**

#### Training and Workshops:

Conducted five training sessions, nine field demonstrations, four workshops, four public presentations, three public talks, and produced six informational booklets.

Supported farmers with soil and water testing services and training on integrated pest management and sustainable income techniques.

**Agro-Entrepreneurship Week:**

Held from 15-18 November 2023, the event included presentations, exhibitions, and sales events that connected agro-entrepreneurs and start-ups with key industry players, enhancing their market integration and showcasing innovative ideas.

**Digitalization and Knowledge Management:**

Launched a knowledge repository platform to improve information flow within FAREI and beyond, marking the beginning of the organisation's digital transformation.

The narrative and financial report for the project was submitted to the European Union in May 2024.



Figure 46: Workshop on Soil Fertility Management

## Events

Major events organized during the year were as follows:

- Signing of Memorandum of Understanding between FAREI and PML. FAREI, Réduit.
- Hosting of the Regional Training Workshop, co-sponsored by the UNCTAD and ANSO, on use of satellite technology for crop monitoring. Hotel Ambre, Belle Mare.
- Dissemination Workshop “Building the Resilience of Food Systems in Mauritius and Seychelles by leveraging on sustainable agricultural practices”. Hennessy Park Hotel, Ebène.
- Inception Workshop “Enhancing Organic Farming through Value chain Analysis”. Hennessy Park Hotel, Ebène
- Second Edition of Agricultural Science Exchange Forum: “Transforming Agrifood Systems for Resilience through Research and Innovation”. Boname Hall, MCIA, Réduit
- Training in rearing of black soldier fly and public lecture on the potential of rearing of black soldier flies. FAREI, Réduit.
- Capacity building in coconut production and processing. Agro-Processing Resource Centre, Wooton.
- Launching of Potato Variety Everest and Chilli variety Senturi, during World Food Day organised by the MAIFS. Octave Wiehe Auditorium, Réduit.
- Visit by UNEP delegation to Wasaza fixed dome biodigester plant at CLRS (SWITCH Africa Green Project). Curepipe Livestock Research Station.
- Award of certificates and distribution of starter kits under the Organic Household and Gardening Project at Caroline and St Hilaire.
- Agro-entrepreneurship week. Farmer’s Training School, Wooton and B to C at FSC St Pierre.
- Site visit at FAREI within the implementation of the project “Building capacity to determine optimal post-harvest and processing practices for the production of quality cocoa beans and derived products in Mauritius”, Agro-Processing Resource Centre, Wooton.
- Roselle Field Day and exhibition of roselle processed products. Farmer’s field, Long Mountain.
- Strawberry field day. FAREI Wooton Crop Research Station.
- Award of certificates for training on “Advanced course in molecular biology and plant physiology for the screening of breeding lines for abiotic and biotic stresses”. Wooton
- Food-Sec Semence/ SANOI regional Workshop “Theory of changes for a future vision of the seed sector”. Voilà Hotel, Bagatelle.
- Presentation titled “Towards an AnGR strategy for Mauritius” by Pr K Dzama from Stellenbosch University. FTS, Wooton.
- Visit by delegates from Comoro, Reunion, Rodrigues, Seychelles, France and Madagascar to the Agroforestry plot at Britannia under the EU/CIRAD Exchange Programme



Signing of Memorandum of Understanding between FAREI and PML



Hosting of UNCTAD Regional Training Workshop



Inception Workshop “ Enhancing Organic Farming through Value chain Analysis”



Visit UNDP delegates - Pilot biogas project under SAGP project



Training on coconut production



Training - Advanced course in molecular biology and plant physiology under GCCA+ -



Visit to Agroforestry Plot at Britannia by delegation from IO under the EU/CIRAD Exchange Programme



Visit, MRIC delegation, Cocoa processing project



Presentation “Towards an AnGR strategy for Mauritius” by Pr Zamma



Dissemination workshop, UNDP funded Seaweed project

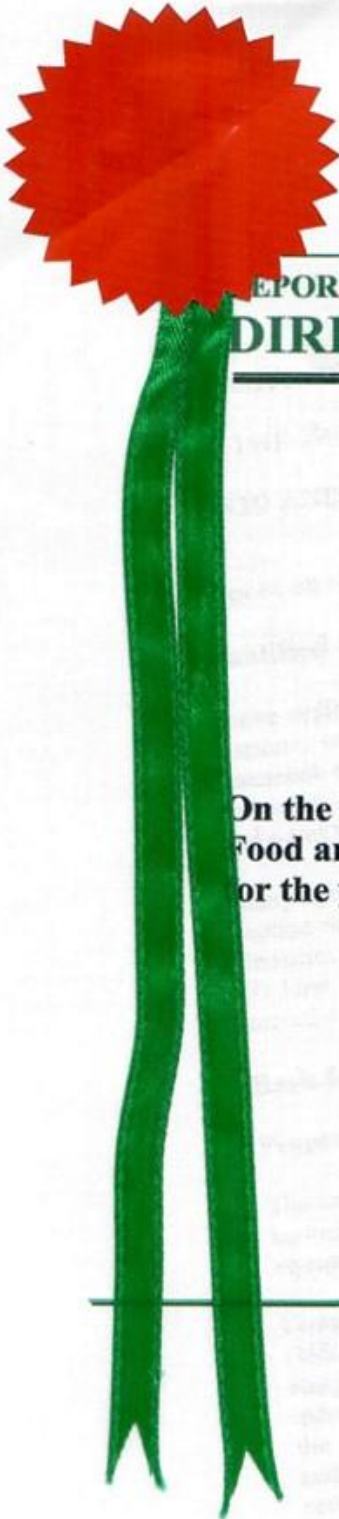


Workshop-Theory of changes for a future vision of the seed sector



Roselle Field day

**Section 6: Report of the Director of Audit and  
Financial Statements for year ended 30 June 2024**



**REPORT OF THE  
DIRECTOR OF AUDIT**

**On the Financial Statements of the  
Food and Agricultural Research and Extension Institute  
for the year ended 30 June 2024**

**NATIONAL AUDIT OFFICE**



Republic of Mauritius

## NATIONAL AUDIT OFFICE

### REPORT OF THE DIRECTOR OF AUDIT

### TO THE BOARD OF THE

### FOOD AND AGRICULTURAL RESEARCH AND EXTENSION INSTITUTE

#### Report on the Audit of the Financial Statements

#### Qualified Opinion

I have audited the financial statements of the Food and Agricultural Research and Extension Institute, which comprise the statement of financial position as at 30 June 2024 and the statement of financial performance, statement of changes in net assets/equity, cash flow statement and statement of comparison of budget and actual amounts for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In my opinion, except for the effects of the matter described in the Basis for Qualified Opinion section of my report, the accompanying financial statements give a true and fair view of the financial position of the Food and Agricultural Research and Extension Institute as at 30 June 2024, and of its financial performance and cash flows for the year then ended in accordance with International Public Sector Accounting Standards (IPSASs).

#### Basis for Qualified Opinion

##### Property, Plant and Equipment – Rs 126,069,495

The carrying amount of buildings which stood at Rs 27.7 million as of 30 June 2024 did not include all buildings which have been vested in the Institute. Hence, property, plant and equipment were materially understated due to incomplete recognition of buildings.

I conducted my audit in accordance with International Standards of Supreme Audit Institutions (ISSAIs). My responsibilities under those standards are further described in the 'Auditor's Responsibilities for the Audit of the Financial Statements' section of my report. I am independent of the Food and Agricultural Research and Extension Institute in accordance with the INTOSAI Code of Ethics, together with the ethical requirements that are relevant to my audit of the financial statements in Mauritius, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my qualified opinion.

#### Emphasis of Matter

I draw attention to the General Fund in the Statement of Financial Position which showed a deficit of Rs 890,032,220 as at 30 June 2024 compared to a deficit of Rs 806,106,469 as at 30 June 2023.

My opinion is not modified in respect of this matter.

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### **Key Audit Matters**

Key Audit Matters are those matters that, in my professional judgment, were of most significance in my audit of the financial statements of the current period. These matters were addressed in the context of my audit of the financial statements as a whole, and in forming my opinion thereon, and I do not provide a separate opinion on these matters. Except for the matter described in the Basis for Qualified Opinion section of my report, I have determined that there are no other key audit matters to communicate in my report.

### **Other Information**

Management is responsible for the other information. The other information comprises the information included in the annual report of the Food and Agricultural Research and Extension Institute, but does not include the financial statements and my report thereon.

My opinion on the financial statements does not cover the other information and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or my knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact. I have nothing to report in this regard.

### **Responsibilities of Management and Those Charged with Governance for the Financial Statements**

Management is responsible for the preparation and fair presentation of these financial statements in accordance with IPSASs, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Food and Agricultural Research and Extension Institute's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management intends to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Food and Agricultural Research and Extension Institute's financial reporting process.

### **Auditor's Responsibilities for the Audit of the Financial Statements**

My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISSAIs, will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISSAIs, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Food and Agricultural Research and Extension Institute's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Food and Agricultural Research and Extension Institute's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Food and Agricultural Research and Extension Institute to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I also provide those charged with governance with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, I determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. I describe these matters in my auditor's report unless law or regulation precludes public disclosure about the matter or, when, in extremely rare circumstances, I determine that a matter should not be communicated in my report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

## Report on Other Legal and Regulatory Requirements

### Qualified Opinion

#### *Statutory Bodies (Accounts and Audit) Act*

I have obtained all information and explanations which to the best of my knowledge and belief were necessary for the purpose of my audit.

In accordance with the requirements of the Statutory Bodies (Accounts and Audit) Act, I report as follows:

- (a) this Act in so far as it relates to the accounts, has been complied with. No direction relating to the accounts has been issued by the responsible Minister to the Food and Agricultural Research and Extension Institute;
- (b) in my opinion, and, as far as could be ascertained from my examination of the financial statements submitted to me, expenditure incurred were not of an extravagant or wasteful nature, judged by normal commercial practice and prudence; and
- (c) in my opinion, except for the matter reported in my Basis for Qualified Opinion paragraph below, the Food and Agricultural Research and Extension Institute has been applying its resources and carrying out its operations economically, efficiently and effectively.

#### *Public Procurement Act*

In accordance with the requirement of the Public Procurement Act, the auditor of every public body shall state in his annual report whether the provisions of Part V of the Act have been complied with.

In my opinion, the provisions of Part V of the Act have been complied with as far as it could be ascertained from my examination of the relevant records.

### Basis for Qualified Opinion

The Food and Agricultural Research and Extension Institute has not been applying its resources and carrying out its operations economically, efficiently and effectively

#### Inordinate delays in completion of capital projects

The three projects, namely extension of Food and Agricultural Research and Extension Institute head office building, construction of building at Wooton (Phase 1) and erection of 5-span greenhouse at Wooton Crop Research Station, with revised completion dates of 21 June 2022, 30 November 2023 and 27 October 2024 respectively, were still not completed as of April 2025. The delay in the completion of these projects has been impacting negatively on the activities of the Institute.

I performed procedures, including the assessment of the risks of non-compliance with laws and regulations, to obtain audit evidence to discharge my responsibilities as described in the 'Auditor's Responsibilities' section of my report as referred to below. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my qualified opinion.

### *Management's Responsibilities for Compliance*

In addition to the responsibility for the preparation and presentation of the financial statements described above, management is also responsible to ensure that the Food and Agricultural Research and Extension Institute's operations are conducted in accordance with the provisions of laws and regulations, including compliance with the provisions of laws and regulations that determine the reported amounts and disclosures in an entity's financial statements.

### *Auditor's Responsibilities*

In addition to the responsibility to express an opinion on the financial statements described above, I am also responsible to report to the Board whether:

- (a) I have obtained all the information and explanations which to the best of my knowledge and belief were necessary for the purpose of the audit;
- (b) the Statutory Bodies (Accounts and Audit) Act and any directions of the Minister, in so far as they relate to the accounts, have been complied with;
- (c) in my opinion, and, as far as could be ascertained from my examination of the financial statements submitted to me, any expenditure incurred is of an extravagant or wasteful nature, judged by normal commercial practice and prudence;
- (d) in my opinion, the Food and Agricultural Research and Extension Institute has been applying its resources and carrying out its operations economically, efficiently and effectively; and
- (e) the provisions of Part V of the Public Procurement Act regarding the bidding process have been complied with.



**DR D. PALIGADU**  
Director of Audit

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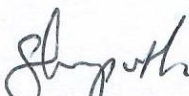
7 May 2025


## STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2024

	Notes	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>ASSETS</b>			
<b>Current Assets</b>			
Cash and cash equivalents	6	158,389,868	159,926,510
Receivables	7	11,367,911	12,964,175
Inventories	8	8,064,630	8,877,100
Prepayments	9	286,351	296,101
		<u>178,108,760</u>	<u>182,063,886</u>
<b>Non-current assets</b>			
Receivables	10	23,830,010	18,348,593
Property, plant and equipment	11	126,069,495	98,959,702
Work in progress	12	49,453,313	28,942,534
Intangible Assets	13	3,567,932	86,412
		<u>202,920,750</u>	<u>146,337,241</u>
<b>Total assets</b>		<b><u>381,029,510</u></b>	<b><u>328,401,127</u></b>
<b>LIABILITIES</b>			
<b>Current liabilities</b>			
Payables	14	22,786,430	7,779,752
Car loan payable	15	7,125,008	8,406,849
Employee benefit	16	17,898,959	16,351,621
Liabilities recognized under transfer arrangements	20	172,538,630	171,256,561
		<u>220,349,028</u>	<u>203,794,783</u>
<b>Non-Current Liabilities</b>			
Employee benefit	17	168,911,170	161,436,929
Car loan payable	18	18,323,578	17,299,474
Defined benefit pension	19	863,477,954	734,127,855
Liabilities recognized under transfer arrangements	20	-	17,848,556
		<u>1,050,712,702</u>	<u>930,712,814</u>
<b>Total liabilities</b>		<b><u>1,271,061,730</u></b>	<b><u>1,134,507,597</u></b>
<b>Net liabilities</b>		<b><u>(890,032,220)</u></b>	<b><u>(806,106,469)</u></b>
<b>NET ASSETS / EQUITY</b>			
General fund		<u>(890,032,220)</u>	<u>(806,106,469)</u>
<b>Total net assets / equity</b>		<b><u>(890,032,220)</u></b>	<b><u>(806,106,469)</u></b>

The accompanying notes form an integral part of the financial statements.

Approved by the Board on 24 April 2025.

  
Ritesh Sumputh  
Chairperson

  
H D Bedacee-Dindoyal (Mrs)  
Board Member

## STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED 30 JUNE 2024

	Notes	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>Revenue</b>			
<b>Revenue from non-exchange transactions</b>			
Transfers from government	21	512,730,132	491,383,113
Transfers from other entities	22	53,908,209	23,545,580
<b>Revenue from exchange transactions</b>			
Sales of produce and rendering of services	23	10,175,541	13,688,450
Other Revenue	24	-	1,765,265
<b>Total Revenue</b>		<b><u>576,813,882</u></b>	<b><u>530,382,408</u></b>
<b>Expenses</b>			
Salaries and employee benefits	25	396,049,225	375,719,162
Supplies and consumables	26	44,977,447	48,212,594
Depreciation and amortisation	27	21,673,974	17,912,136
Other expenses	28	106,710,997	90,158,475
<b>Total Expenses</b>		<b><u>569,411,643</u></b>	<b><u>532,002,368</u></b>
<b>Surplus/(Deficit) for the year</b>		<b><u>7,402,239</u></b>	<b><u>(1,619,960)</u></b>

**STATEMENT OF CHANGES IN NET ASSETS / EQUITY  
FOR THE YEAR ENDED 30 JUNE 2024**

	<b>Rs</b>
<b>General fund</b>	
Balance as at 01 July 2022	(728,818,013)
Prior year adjustment	8,563,052
Remeasurement of Employee Benefit: IPSAS 39	(84,231,548)
Deficit for the period	<u>(1,619,960)</u>
Closing balance as at 30 June 2023	<u>(806,106,469)</u>
Balance as at 01 July 2023	(806,106,469)
Prior year adjustment	(794,516)
Remeasurement of Employee Benefit: IPSAS 39	(90,533,473)
Surplus for the period	<u>7,402,239</u>
Closing balance as at 30 June 2024	<u>(890,032,220)</u>

## CASH FLOW STATEMENT FOR THE YEAR ENDED 30 JUNE 2024

	Notes	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>			
Surplus/(Deficit) for the year		7,402,239	(1,619,960)
Prior year adjustment		(794,520)	8,877,100
<b>Non-cash movements</b>			
Depreciation for the year		21,155,688	17,845,893
Amortisation of intangible asset		518,286	66,243
Exchange (gain)/loss		848,040	(1,765,265)
(Gain)/Loss on disposal of fixed assets		(545,200)	-
Increase / (Decrease) in defined benefit pension		38,816,626	25,899,325
(Increase) / Decrease in receivables		(3,875,404)	(570,235)
Increase / (Decrease) in payables		(1,817,545)	12,102,768
Increase / (Decrease) in employee benefit		9,021,579	9,997,200
<b>Net cash flows from operating activities</b>		<b>70,729,789</b>	<b>70,833,068</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>			
Purchase of property, plant and equipment	b	(48,265,476)	(37,429,934)
Purchase of intangible assets		(3,999,806)	-
(Increase) / Decrease in inventories		812,470	(8,877,100)
Increase in work in progress		(20,510,779)	(13,348,380)
Proceeds from disposal of fixed assets		545,200	-
<b>Net cash flows from investing activities</b>		<b>(71,418,391)</b>	<b>(59,655,414)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>			
Exchange gain/(loss)		(848,040)	1,765,265
Loan received from Ministry		8,682,400	7,257,499
Loan repaid to Ministry		(7,541,184)	(10,281,678)
Loan repayment due to Ministry		-	(1,398,954)
Loan release to staff		(8,682,400)	(7,257,499)
Loan refunded by staff		7,541,184	11,680,632
<b>Net cash flow from financing activities</b>		<b>(848,040)</b>	<b>1,765,265</b>
<b>Net increase in cash and cash equivalents</b>		<b>(1,536,642)</b>	<b>12,942,919</b>
<b>Cash and cash equivalents at the beginning of the year</b>		<b>159,926,510</b>	<b>146,983,591</b>
<b>Cash and cash equivalents at end of the year</b>	a	<b>158,389,868</b>	<b>159,926,510</b>

### Notes to Cash Flow

#### a. Cash and cash equivalents

The cash and cash equivalents consist of cash in hand and bank balances. The cash and cash equivalents included in the cash flow statement comprise the following:

Cash at bank	158,350,041	159,897,385
Cash in hand	39,827	29,125
	<b>158,389,868</b>	<b>159,926,510</b>

#### b. Property, plant and equipment

During the financial year ended 30 June 2024, FAREI acquired property, plant and equipment amounting to Rs48,265,476 which was financed by cash. A total of Rs4,267,535 funded by the Government in terms of capital contribution were spent on infrastructure assets.

## STATEMENT OF RECONCILIATION FINANCIAL STATEMENT AND ACTUAL FOR THE YEAR ENDED 30 JUNE 2024

	Revised Budget Rs	Actual Amount Rs		Movement Rs	Financial Statement Rs
<b>Revenue</b>					
Government Grant	391,000,000	388,627,469		-	388,627,469
Capital Grant	115,000,000	49,339,138		48,036,016	95,747,947
Schemes	49,000,000	104,415,820		(22,082,859)	82,335,051
Other Income	10,000,000	10,175,541			10,175,541
	<b>565,000,000</b>	<b>552,557,968</b>		<b>25,953,157</b>	<b>576,886,008</b>
<b>Expenditure</b>					
	Revised Budget Rs	Actual Amount Rs	Accruals Rs	Prepayment Rs	Financial Statement Rs
Salaries and other related costs	261,667,042	246,734,239	4,733,284	-	255,358,426
Pension cost (SICOM)	58,000,000	59,258,810	38,816,626	-	98,075,436
Passage benefits	4,000,000	7,964,787	397,392	-	8,362,179
Travelling and transport	34,562,778	33,621,908	631,276	-	34,253,184
Office expenses	2,700,000	7,299,020	14,594	-	7,313,614
Utilities	7,700,000	7,884,030	662,004	-	8,546,034
Rent	1,225,000	1,216,063	-	-	1,216,063
Maintenance and running cost of vehicles	4,750,000	4,805,224	-	-	4,805,224
Maintenance of building and equipment	3,200,000	6,250,524	243,755	8,485	6,485,793
Training	900,000	1,681,685	11,923	-	1,693,608
Information technology facilities	1,000,000	1,154,095	515	181,906	972,704
Uniform and protective clothing	2,800,000	2,322,737	-	-	2,322,737
Nursery and laboratory consumables	1,000,000	829,104	-	-	829,104
Security services	17,000,000	9,526,252	-	-	9,526,252
Other operating expenses (animal feed, fertiliser, seeds, etc)	23,475,020	21,149,802	1,099,681	-	22,249,483
Schemes	49,000,000	82,319,029	13,932	-	82,335,051
Insurance non-motor	450,000	508,164	-	-	508,164
Legal and professional fee	650,000	1,080,700	-	-	1,080,700
Chairman and board members fee	1,300,000	955,875	-	-	955,875
<b>Total expenditure</b>	<b>475,379,840</b>	<b>496,562,047</b>	<b>46,624,982</b>	<b>190,391</b>	<b>546,889,630</b>

## STATEMENT OF COMPARISON OF BUDGET AND ACTUAL AMOUNTS FOR THE YEAR ENDED 30 JUNE 2024

	Original Budget Rs	Revised Budget Rs	Actual Received/ Paid Rs	Difference Revised Budget and Actual Rs	Remarks
<b>Revenue</b>					
Government Grant	391,000,000	391,000,000	388,627,469	2,372,531	Decrease in funds received from MAIFS
Capital Grant	115,000,000	115,000,000	49,339,138	65,660,862	Disbursement based on actual expenditure incurred
Schemes	49,000,000	49,000,000	104,415,820	(55,415,820)	Additional funds disbursed under National Resilience Fund for fruit protection and sheltered farming schemes
Other Income	10,000,000	10,000,000	10,175,541	(175,541)	Favourable variance generated from sales
	<b>565,000,000</b>	<b>565,000,000</b>	<b>552,557,968</b>		
<b>Expenditure</b>					
Salaries and other related costs	261,667,042	261,667,042	246,734,239	14,932,803	Savings arising due to retirement of officers and non-filling of vacancies.
Pension cost (SICOM)	58,000,000	58,000,000	59,258,810	(1,258,810)	
Passage benefits	4,000,000	4,000,000	7,964,787	(3,964,787)	Increase in cashing of passage benefits
Travelling and Transport	34,562,778	34,562,778	33,621,908	940,870	Savings due to retirement of officers and non-filling of vacancies
Office Expenses	10	2,700,000	7,299,020	(4,599,020)	Overspent on overseas study tours financed under DeSIRA and other expenses funded under projects
Utilities	7,770,000	7,700,000	7,884,030	(184,030)	Increase due to additional mobile phones issued to officers
Rent	10	1,225,000	1,216,063	8,937	
Maintenance and running cost vehicles	10	4,750,000	4,805,224	(55,224)	Increase due to additional expenses on newly purchased vehicles
Maintenance of building and equipment	10	3,200,000	6,250,524	(3,050,524)	Overspent amount financed under capital budget
Training	10	900,000	1,681,685	(781,685)	Increase in training activities for farmers. Staff training funded under projects
Information Technology Facilities	10	1,000,000	1,154,095	(154,095)	Increase due to expenses incurred under capital project
Uniform and protective clothing	2,800,000	2,800,000	2,322,737	477,263	Savings due to non-filling of vacancies
Nursery & Laboratory consumables	10	1,000,000	829,104	170,896	Budget was overstated
Security services	10	17,000,000	9,526,252	7,473,748	New security contract not yet awarded due to ongoing bidding exercise. Previous contract extended
Other operating expenses (animal feed, fertilizer, seeds, etc)	22,200,070	23,475,020	21,149,802	2,325,218	Budget was overstated
Schemes		49,000,000	82,319,029	(33,319,029)	Overspent financed from unutilized funds from previous years and under National Resilience Fund
Insurance non-motor	10	450,000	508,164	(58,164)	
Legal & Professional Fee Chairman and Board members fee	10	650,000	1,080,700	(430,700)	Budget was underestimated for audit fee, selection panel and bid evaluation committee fees
	10	1,300,000	955,875	344,125	Budget was overstated
<b>Total Expenditure</b>	<b>391,000,000</b>	<b>475,379,840</b>	<b>496,562,047</b>	<b>(21,182,209)</b>	

## NOTES TO THE ACCOUNT FOR YEAR ENDED 30 JUNE 2024

### 1A. GENERAL INFORMATION ON REPORTING ENTITY

The Food and Agricultural Research and Extension Institute (FAREI), a body corporate which operates under the aegis of the Ministry of Agro Industry and Food Security, was established on 14 February 2014 and is regulated by the **Food and Agricultural Research and Extension Institute Act 2013**.

The establishment of the FAREI was to take over the activities of the Food and Agricultural Research Council (FARC), including the Agricultural Research and Extension Unit (AREU).

The objects of FAREI is to introduce, develop and promote such novel technologies in the food and non-sugar agricultural sector as may be approved by the Minister; to coordinate, promote and harmonise research activities in non-sugar agriculture, food production and forestry; promote and encourage agricultural and agribusiness development, through the setting up of agricultural youth clubs and agricultural entrepreneur clubs; and promote dissemination and practical application of the results of any research undertaken under the FAREI Act.

The Institute's principal place of business is at Redit.

### 1B. STATEMENT OF COMPLIANCE AND BASIS OF PREPARATION OF THE FINANCIAL STATEMENTS

#### a. Statement of compliance

The financial statements have been prepared in accordance with and comply with the International Public Sector Accounting Standards (IPSASs) issued by the International Public Sector Accounting Standards Board (IPSASB) which is a Board of the International Federation of Accountants Committee (IFAC).

Where an IPSAS does not address a particular issue, the appropriate International Financial Reporting Standards (IFRSs) and International Accounting Standards (IAS) of the International Accounting Standards Board (IASB) are applied.

#### b. Basis of preparation

The financial statements have been prepared on an accrual and on a going concern basis. The accounting policies have been applied consistently throughout the period. The measurement base applied is historical cost adjusted for revaluation of assets.

The presentation of Financial Statements as per IPSAS1 comprises:

- Statement of Financial Position
- Statement of Financial Performance
- Statement of changes in net assets and equity
- Cash Flow Statement
- Statement of comparison of actual and budget amounts, and
- Notes comprising of significant accounting policies and other explanatory notes

**c. Reporting period**

The financial statements and comparative figures cover transactions for twelve months period from 01 July to 30 June.

**d. Level of rounding**

The figures in the Financial Statements have been rounded to the nearest rupee.

**e. Cash Flow**

The Cash Flow Statement is prepared using indirect method.

**f. Standards issued but not yet effective**

IPSAS 43 - Leases (effective 1 January 2025)

IPSAS 44 - Non-current Assets Held for Sale and Discontinued Operations (effective date 1 January 2025)

IPSAS 45 - Property Plant and Equipment (effective 1 January 2025)

IPSAS 46 - Measurement (effective 1 January 2025)

IPSAS 47 - Revenue (effective 1 January 2026)

IPSAS 48 - Transfer Expenses (effective 1 January 2026)

IPSAS 49 - Retirement Benefit Plans (effective 1 January 2026)

The Institute anticipates that the adoption of these Standards for the year ended 30 June 2024 will have no material impact on the Financial Statements.

**g. Presentation currency**

The Financial Statements have been prepared and presented in Mauritian Rupee (Rs), which is the functional and reporting currency of the Institute.

**2. ACCOUNTING POLICIES**

**a. Revenue Recognition**

**Revenue from exchange transactions**

Revenue from sales, services provided and training activities are being recognised when the transactions have been performed and are billable.

**Revenue from non-exchange transactions**

Assets and revenue arising from transfer transactions are recognised in accordance with the requirement of IPSAS23, revenue from non-exchange transactions (taxes and transfers) and includes any grants (transfers) from Government and other institutions.

Advances received from non-exchange transactions are recognised as liability. The amortised amount of advances is treated as revenue in the Statement of Financial Performance.

### **b. Property, Plant and Equipment**

Property, plant and equipment are stated at historical cost less accumulated depreciation. Historical cost is the amount of cash or cash equivalents paid to acquire an asset at the time of acquisition.

Property, plant and equipment valued at Rs10,000 and above are capitalised and treated as fixed assets.

Depreciation is provided on straight line basis so as to write-off the depreciable value of the assets over their expected useful economic lives. Depreciation has been provided for in the month following the month of purchase.

No depreciation is provided in the month of disposal.

The annual rates of depreciation are as follows:

Buildings.....	2%
Office equipment.....	20%
Furniture and fittings.....	10%
Infrastructure Assets.....	10%
Field equipment.....	25%
Heavy duty field equipment.....	20%
Motor vehicle.....	20%
Computer hardware.....	20%
Laboratory equipment.....	15%
Food processing and PCR Laboratory .....	15%
Greenhouse.....	25%
Greenhouse equipment, fog unit and polycarbonate greenhouse.....	10%

### **c. Intangible Assets**

Intangible assets comprise computer software which is recorded at cost. Computer software is amortised using straight line method over a useful life of five years (20%). Cost incurred towards licence renewal is expensed.

### **d. Impairment of non-current assets**

At the balance sheet date, the carrying amount of tangible assets was reviewed to determine whether there was an indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss and the carrying amount of the asset is reduced to its recoverable amount.

### **e. Inventories**

FAREI holds cattle and goats on its livestock research stations at Curepipe and Belle Mare. The animals are kept for research purposes and can be sold at any time depending on physiological status and when in excess of requirement for production.

The animals are evaluated on live weight basis at a predetermined selling price.

#### **f. Operating Lease**

Rentals payable under operating lease agreements are charged to the Statement of Financial Performance on straight line basis over the term of the relevant lease.

Operating leases are leases and assets, the ownership of which is retained by the lessor (see note 29).

#### **g. Leasehold Land and Building**

Land occupied by the Institute is owned by the Ministry of Agro Industry and Food Security and has not been capitalised.

The buildings occupied by FAREI, apart from the Head Office building at Reduit, the Tissue Culture Laboratory and the Farmers Training School at Wooton, belong to the Ministry and are as such not reflected in the Financial Statements. However, buildings and structures that have been refurbished or constructed during the financial period under review, are reflected in the financial statements.

FAREI occupies research stations, demonstration centres and model farms on 17 locations across the island. The total acreage of the 17 sites amounts to 48.82 hectares. These sites have been vested to FAREI with no rental charge.

#### **h. Transaction and balances**

Foreign currency transactions are translated into the measurement currency using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year end exchange rates of monetary assets and liabilities denominated in foreign currency are recognised in the surplus/deficit.

#### **i. Employee Benefits**

All permanent employees of FAREI have pension plans which are managed by the State Insurance Company of Mauritius Limited.

##### **i. Defined Benefit Pension**

Provision for retirement benefits to employees of the FAREI is made under the Statutory Bodies Pension Funds Act, as subsequently amended. The scheme is a Defined Benefit Pension for employees who joined FAREI prior to 2013. The contribution rate by employees is 6% and 19% for employer. The cost of providing benefits is actuarially determined using the projected unit credit method (see note 19).

The present value of these funded obligations is recognised in the Statement of Financial Position as a non-current liability after adjusting for the fair value of plan assets, any unrecognised actuarial gains and losses and any unrecognised past service cost.

The net total of the current service cost, interest cost, expected returns on plan assets, current service cost, any recognised actuarial gains and losses, any recognised past service cost and the effect of any curtailment or settlement is recognised in the Statement of Financial Performance.

##### **ii. Defined Contribution Scheme**

As from January 2013, the Public Pensions Defined Contribution Pension Scheme (PPDCS) was set up. Consequently, with effect from January 2013, all new entrants shall join the new PPDCS and shall earn

benefits according to the new provisions as compared to existing members who shall continue to be members of the existing Defined Pension Scheme (DPS) and earn benefits accordingly. The contribution rate for the PPDCS is 6% for employees and 12% for employers. FAREI makes separate contribution into the two pension plans.

### iii. Contribution Sociale Généralisée (CSG)

With the changes brought by the Finance (Miscellaneous Provisions) Act 2020, the Contribution Sociale Généralisée (CSG), has been introduced and was applicable as from the month of September 2020. This new system of social contributions replaced the National Pensions Fund (NPF).

Under the CSG, Public Sector employees are exempt from the contribution. FAREI contributes 4.5% of salaries for employees earning a basic salary not exceeding Rs50,000 in a month and 9% for employees earning a basic salary exceeding Rs50,000 in a month.

### iv. State Pension Plan

Contribution to the National Pension Fund (NPF) on behalf of temporary and contract employees are expensed in the Statement of Financial Performance in the period in which they fall due. As from September 2020, the NPF has been replaced by CSG.

### v. Family Protection Scheme

A Family Protection Scheme exists at the FAREI whereby 4% of monthly salary of each employee on a permanent and pensionable establishment is paid to either the Civil Service Family Protection Scheme or the State Insurance Company of Mauritius Limited (SICOM) which manage the scheme. A contribution of 2% respectively by FAREI and the employee is made towards the schemes. (See note 25).

### vi. Other Employee Benefits

Other employee benefits include accumulated sick leave, passage benefits and refund of unutilized vacation leave.

Employees are allowed to accumulate sick leave not taken at the end of each year up to a maximum of 110 days, in a sick leave bank as at 30 June 2024. The balance of banked sick leave is valued at the end of the financial year and is recognized as long term payables. Beyond the ceiling of 110 days, officers are refunded part of the annual entitlement of sick leaves up to a maximum of 16 days, not taken at the end of every calendar year and is expensed to the Statement of Financial Performance.

A provision is made for the estimated liability for passage benefits. The passage benefit for each staff is valued at year end and is included as short-term liabilities. The annual increase in passage benefit is expensed to the Statement of Financial Performance.

Vacation leave has been computed for all permanent and pensionable staff.

## j. Key Management Personnel Compensation

Key management personnel are those persons having authority and responsibility of planning, directing and controlling the activities of the Institute, directly or indirectly, including directors (whether executive or otherwise) of the Institute.

The compensation paid to key management personnel is based on the recommendation of the Pay Research Bureau Report.

#### **k. Provisions**

Provisions are recognised when there is a present or constructive obligation as a result of past events which it is probable will result in an outflow of economic benefits that can be reasonably estimated.

#### **l. Use of estimates and judgement**

The preparation of financial statements, in accordance with the International Public Sector Accounting Standards requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the Financial Statement and the reported amounts of revenues and expenses during the reporting period. Although these estimates are based on management's best knowledge of current events and actions, actual results ultimately may differ from these estimates.

#### **m. Car Loan**

Car loan is granted to eligible officers at the rate of 3% per annum. The funding of the loan is from the Ministry by way of advance to FAREI which is subsequently advanced to employees.

#### **n. Presentation of budget information in financial statements**

The Institute presents its approved budget on a cash basis and the financial statements on an accrual basis. The budget is approved on a cash basis by classification and by nature. The approved budget covers the period 1 July 2023 to 30 June 2024.

### **3. RELATED PARTY TRANSACTIONS**

Related parties are considered to be related if one party has the ability to control the other party and exercise significant influence over the party in making financial operating decisions. The immediate and ultimate controlling party of the Institute is the Government of Mauritius.

Transactions undertaken with related parties were at arms' length.

There was no related party transaction during the year.

### **4. FOREIGN CURRENCIES**

Transactions denominated in foreign currencies are translated into Mauritian Rupees and recorded at the rate of exchange prevailing at the date of the transactions. Balances at the end of the financial period denominated in foreign currencies are translated into Mauritian Rupees at the rate prevailing at that date.

## 5. RISK MANAGEMENT POLICIES

A description of the various risks to which the FAREI is exposed, as well as the approach taken by management to control and mitigate those risks is shown below.

Liquidity Risk	This refers to the possibility of default by the FAREI to meet its obligations because of the unavailability of funds to meet both operational and capital requirements. There is a cash management system to ensure that the FAREI is able to fund its expenditure in a timely manner and meet its obligations as they fall due. To secure liquidity, FAREI benefit from credit facilities provided by suppliers
Credit Risk	Credit risk relates to the possibility of default by employees in settling their loan obligations towards the FAREI. The FAREI has established a “lien” policy on cars purchased by those employees who benefit from such car loans.
Currency Risk	Fund received in foreign currency is kept in a foreign currency account in order to mitigate the risk of loss in exchange rate. Operating transactions are effected from a rupee account for externally funded project.
Actuarial Risk	FAREI has pension plans and insurance cover for its employees and assets. These plans are exposed to actuarial risks such as: investment risk, interest rate risk, longevity risk and salary risk.
Health and Safety Risk	<p>FAREI complies with provisions of the OSHA 2005 so as to provide a safe working environment for its employees. Management of Safety and Health issues is effected by the Safety and Health Committee which provides the appropriate platform for both Management and Unions. On the operational side, Health Surveillance is being undertaken for all employees who may be exposed to hazards by virtue of their duties. MSB certified personal protective equipment are provided to employees. Risk Assessments are duly carried out at all sites and Material Safety Data Sheets are available on each site.</p> <p>With the emergence of the COVID 19 pandemic, FAREI has devised protocols which are being implemented in line with parameters set by the Government to curtail the risk of spread of the Corona virus at the workplace</p>
Legal and Regulatory Risk	Legal risk is the risk of financial or reputational loss that can result from non-compliance to legal requirement either from lack of awareness or misunderstanding of, ambiguity in, or reckless indifference to, the way law and regulation apply. To mitigate such risk an annual retainer fee is paid to Solicitor General to provide assistance on legal matters
External and Strategic Risk	Strategic risk refers to the internal and external events that may make it difficult, or even impossible, for the Institute to achieve its objectives and strategic goals. The internal risks, like employee turnover is addressed through the Institute’s succession planning and recruitment policy. The impact of external risks which are outside the control of FAREI or resulting from a change in legislation is mitigated through Government intervention/assistance to ensure continuity.

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>6. CASH AND CASH EQUIVALENTS</b>		
Cash at Bank	158,350,041	159,897,385
Cash in hand	39,826	29,125
	<b>158,389,868</b>	<b>159,926,510</b>
<b>7. RECEIVABLES – CURRENT ASSETS</b>		
Debtors - car loan	7,125,008	7,007,896
Grant receivable from MAIFS	2,692,361	4,457,313
Sundry debtors	-	6,249
Debtors - chargeable services	1,550,542	1,492,717
	<b>11,367,911</b>	<b>12,964,175</b>
<b>8. INVENTORIES</b>		
Inventories comprise of animals held for research		
Animals	<b>8,064,630</b>	<b>8,877,100</b>
<b>9. PREPAYMENT</b>		
Prepayments are recognised as financial assets when payment for goods and services has been made in advance of obtaining a right to access those goods or services. Prepayments were made with respect to the following:		
Insurance	17,959	17,959
Rent	48,000	48,000
Maintenance Contract	190,392	200,142
Legal and Professional Fee	30,000	30,000
	<b>286,351</b>	<b>296,101</b>
<b>10. RECEIVABLES – NON-CURRENT ASSETS</b>		
Grant receivable from MAIFS	5,506,456	1,049,143
Debtors-car loan falling due more than one year	18,323,554	17,299,450
	<b>23,830,010</b>	<b>18,348,593</b>

## 11. PROPERTY, PLANT AND EQUIPMENT

	Buildings Rs	Furniture and Fittings Rs	Office Equipment Rs	Computer Hardware Rs	Infrastructure Assets Rs	Motor Vehicle and Heavy Duty Field Equipment Rs	Laboratory Furniture, Fittings and Equipment Rs	Fog Unit and Polycarbonate and Hydroponic Greenhouse Rs	Food Processing and PCR Laboratory Rs	Light Field Equipment Rs	Total Rs
<b>Cost and Valuation</b>											
At cost as at 01 July 2023	41,067,721	3,478,941	7,511,980	6,612,947	44,111,127	41,293,891	13,249,391	42,377,133	3,373,438	11,365,191	214,441,761
Additions	1,201,750	647,272	1,510,766	3,409,728	4,267,535	7,924,975	7,324,361	18,021,505	563,270	3,394,314	48,265,476
Disposal	-	-	-	-	-	(5,115,773)	-	-	-	-	(5,115,773)
At cost as at 30 June 2024	42,269,471	4,126,213	9,022,745	10,022,676	48,378,662	44,103,093	20,573,752	60,398,638	3,936,708	14,759,505	257,591,465
<b>Depreciation</b>											
Depreciation as at 01 July 2023	13,656,033	365,411	3,876,156	3,160,377	11,940,984	39,642,373	6,316,905	30,072,077	2,096,981	4,354,760	115,482,058
Charge for the year	837,378	363,360	1,369,441	1,070,691	4,530,839	2,273,350	2,376,848	4,742,444	534,833	3,056,502	21,155,686
Disposal	-	-	-	-	-	(5,115,773)	-	-	-	-	(5,115,773)
Depreciation as at 30 June 2024	14,493,411	728,771	5,245,598	4,231,068	16,471,823	36,799,950	8,693,754	34,814,520	2,631,814	7,411,262	131,521,971
<b>Carrying Amount</b>											
As at 30 June 2024	27,776,060	3,397,442	3,777,148	5,791,608	31,906,839	7,303,142	11,879,999	25,584,117	1,304,894	7,348,243	126,069,495
As at 30 June 2023	27,411,688	3,113,530	3,635,824	3,452,570	32,170,142	1,651,518	6,932,486	12,305,056	1,276,457	7,010,431	98,959,703

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>12. WORK IN PROGRESS</b>		
This relates to ongoing infrastructure works		
Payroll and HR system	456,966	285,604
Construction of building head office, Wooton, FTS	47,501,553	26,086,796
Construction of garage at Richelieu	-	150,020
Rooftop rainwater harvesting	242,636	242,636
Biogas unit at Curepipe LRS	-	810,835
Toilet facilities at Wooton, TC Lab and Belle Mare	711,377	249,891
Nursery facilities -Tissue Culture Lab	-	54,213
Data repository	-	799,961
Augmentorium	105,280	-
Growth Chamber	122,055	-
Sheds at Curepipe LRS	313,445	-
Compost unit at Flacq	-	262,578
	<b>49,453,313</b>	<b>28,942,534</b>
<b>13. INTANGIBLE ASSETS – SOFTWARE COSTS</b>		
Software costs are capitalized in accordance with the provisions of IPSAS 31		
At cost as at 01 July 2023	397,449	701,826
Additions	3,999,806	-
Disposal	-	(304,377)
At cost as at 30 June 2024	<b>4,397,255</b>	<b>397,449</b>
Amortisation as at 01 July 2023	311,037	549,171
Amortisation for the year	518,286	66,243
Eliminated on disposal	-	(304,377)
Amortisation as at 30 June 2024	<b>829,322</b>	<b>311,037</b>
<b>Written down value as at 30 June 2024</b>	<b>3,567,932</b>	<b>86,412</b>
<b>14. PAYABLES</b>		
Creditors falling due within one year	15,004,367	1,403,917
Accruals	7,782,063	6,375,835
	<b>22,786,430</b>	<b>7,779,752</b>
<b>15. CURRENT PORTION OF LONGTERM BORROWING</b>		
Car loan falling due within one year	<b>7,125,008</b>	<b>8,406,849</b>
<b>16. EMPLOYEE BENEFIT</b>		
Sick Leave	17(a) 8,449,047	7,370,745
Passage Benefits	17(b) 8,907,978	8,768,891
Vacation Leave	17(c) 541,934	211,985
	<b>17,898,959</b>	<b>16,351,621</b>

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>17. EMPLOYEE BENEFIT (LONG TERM)</b>		
Provision for sick leave	17(a) 75,746,622	71,794,012
Provision for passage benefits	17(b) 16,543,387	16,285,082
Provision for vacation leave	17(c) 76,621,161	73,357,834
	<b>168,911,170</b>	<b>161,436,928</b>
<b>17(a) Provision for sick leave</b>		
Opening balance	79,164,757	72,045,488
Less: Payment during the year	(8,669,401)	(11,687,236)
Add: Provisions for the year	13,700,312	18,806,506
Closing balance	84,195,669	79,164,758
Less: Amount falling due within one year	(8,449,047)	(7,370,745)
Amount falling due more than one year	75,746,622	71,794,012
<b>17(b) Provision for passage benefits</b>		
Opening balance	25,053,973	23,823,020
Less: Payment during the year	(7,964,787)	(7,624,347)
Add: Provisions for the year	8,362,179	8,855,300
Closing balance	25,451,365	25,053,973
Less: Amount falling due within one year*	(8,907,978)	(8,768,891)
Amount falling due more than one year	16,543,387	16,285,082
* It is assumed 35% of the provision shall be payable within one year		
<b>17(c) Provision for vacation leave</b>		
Opening balance	73,569,819	71,922,842
Less: Payment during the year	(852,413)	(3,055,764)
Add: Provisions for the year	4,445,689	4,702,741
Closing balance	77,163,095	73,569,819
Less: Amount falling due within one year	(541,934)	(211,985)
Amount falling due more than one year	76,621,161	73,357,834
<b>18. LONG TERM BORROWING</b>		
Car loan amount falling due more than one year	<b>18,323,578</b>	<b>17,299,474</b>
<b>19. DEFINED BENEFIT PENSION</b>		
<b>Employee benefit</b>	<b>863,477,954</b>	<b>734,127,855</b>
<b>Employee benefit statement as per IPSAS 39</b>		
<b>Amounts recognised in statement of financial position at end of year</b>		
Defined benefit obligation	1,413,983,770	1,234,834,951
Fair value of plan assets	(550,505,816)	(500,707,096)
Liability recognized in statement of financial position at end of year	<b>863,477,954</b>	<b>734,127,855</b>
<b>Amounts recognised in statement of financial performance:</b>		
Service cost:		
Current service cost	39,023,126	35,610,980

	<b>Year Ended June 2024</b>	<b>Year Ended June 2023</b>
	<b>Rs</b>	<b>Rs</b>
(Employee contributions)	(10,522,859)	(10,309,402)
Fund expenses	876,841	982,556
Net interest expense / (revenue)	42,758,715	32,261,068
P & L charge	<u>72,135,823</u>	<u>58,545,202</u>
 <b>Remeasurement</b>		
Liability (gain) / loss	105,494,486	80,123,121
Assets (gain) / loss	(14,961,013)	4,108,427
Net assets / equity (NAE)	<u>90,533,473</u>	<u>84,231,548</u>
 <b>Total</b>	 <b><u>162,669,296</u></b>	 <b><u>142,776,750</u></b>
 <b>Movements in liability recognized in financial position:</b>		
At start of year	734,127,855	623,996,980
Amount recognized in P&L	72,135,822	58,545,201
(Contributions paid by employer)	(33,319,196)	(32,645,875)
Amount recognized in NAE	90,533,473	84,231,548
At end of year	<u>863,477,954</u>	<u>734,127,855</u>
The plan is a defined benefit arrangement for the employees and it is a funded plan. The assets of the funded plan are held independently and administered by the SICOM Ltd.		
 <b>Reconciliation of the present value of defined benefit obligation</b>		
Present value of obligation at start of period	1,234,834,951	1,106,818,618
Current service cost	39,023,126	35,610,980
Interest cost	72,940,809	57,992,058
(Benefits paid)	(38,309,602)	(45,709,826)
Liability (gain)/loss	105,494,486	80,123,121
Present value of obligation at end of period	<u>1,413,983,770</u>	<u>1,234,834,951</u>
 <b>Reconciliation of fair value of plan assets</b>		
Fair value of plan assets at start of period	500,707,097	482,821,638
Expected return on plan assets	30,182,094	25,730,990
Employer contributions	33,319,196	32,645,875
Employee contributions	10,522,859	10,309,402
(Benefits paid and other outgo)	(39,186,443)	(46,692,381)
Asset gain/(loss)	14,961,013	(4,108,427)
Estimated Fair value of plan assets at end of period	<u>550,505,816</u>	<u>500,707,097</u>
 <b>Distribution of plan assets at end of period</b>		
<i>Percentage of assets at end of year</i>	<i>%</i>	<i>%</i>
Fixed interest securities and deposits	49.9	53.9
	%	%
Loans	3.1	2.8
Local equities	15.2	14.0

	<b>Year Ended June 2024</b>	<b>Year Ended June 2023</b>
	Rs	Rs
Overseas bonds and equities	31.3	28.8
Property	0.5	0.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

**Additional disclosure on assets issued or used by the reporting entity**

<i>Percentage of assets at end of year</i>	%	%
Assets held in the entity's own financial instruments	0	0
Property occupied by the entity	0	0
Other assets used by the entity	0	0

**Components of the amount recognized in NAE**

Year		
Currency	Rs	Rs
Assets experience gain / (loss) during the period	14,961,013	(4,108,427)
Liability experience gain / (loss) during the period	(105,494,486)	(80,123,121)
	<b>(90,533,473)</b>	<b>(84,231,548)</b>

<b>Year</b>	<b>2024/2025</b>
Expected employer contributions	35,513,123

Weighted average duration of the defined benefit obligation 16 years  
(Calculated as a % change in PV of liabilities for a 1% change in discount rate)

The plan is exposed to actuarial risks such as investment risk, interest rate risk, longevity risk and salary risk.

The cost of providing the benefits is determined using the Projected Unit Method. The principal assumptions used for the purpose of the actuarial valuation were as follows:

	<b>Year Ended June 2024</b>	<b>Year Ended June 2023</b>
	%	%
Discount rate	5.60	6.00
Future salary increases	4.50	4.50
Future pension increases	3.50	3.50
Mortality before retirement	Nil	Nil

Mortality in retirement PA (90) Tables rated down by 2 years

Retirement age 65 years

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>20. LIABILITIES RECOGNISED IN RESPECT OF TRANSFERS</b>		
FAREI received advances from the Government and other institutions for the implementation of projects and payment of schemes to beneficiaries. As at 30 June 2024 there were on-going projects and outstanding claims due to beneficiaries.		
Opening balance	189,105,116	175,366,549
Receipts	161,444,386	139,666,727
	350,549,503	315,033,276
Expenses	(178,010,872)	(125,928,159)
Closing balance	<b>172,538,630</b>	<b>189,105,117</b>
Current liabilities	172,538,630	171,256,561
Non-current liabilities	-	17,848,556
	<b>172,538,630</b>	<b>189,105,117</b>
<b>21. REVENUE FROM NON-EXCHANGE TRANSACTIONS: Transfers from Government</b>		
Recurrent Grant	388,627,469	387,100,536
Projects	41,839,738	34,284,533
Schemes	82,262,925	69,998,044
	<b>512,730,132</b>	<b>491,383,113</b>
<b>22. REVENUE FROM NON-EXCHANGE TRANSACTIONS: Transfers from Other Institutions</b>		
MRIC	669,173	-
DeSIRA EU-funded project	52,128,469	18,677,572
UNDP	397,605	3,720,602
CIAT	712,962	1,147,406
	<b>53,908,209</b>	<b>23,545,580</b>
<b>23. REVENUE FROM EXCHANGE TRANSACTIONS Sales of produce and rendering of services</b>		
Sales of booklets and publications	169,332	342,355
Sales of animals	972,925	1,231,079
Sales of vegetables and produce	2,710,763	3,937,762
Sales of milk and manure	3,759,528	5,290,700
Revenue from testing and diagnosis	640,368	205,805
Training and registration fee	595,470	383,065
Sundry Income	781,954	2,297,684
Gain on disposal of fixed assets	545,200	-
	<b>10,175,541</b>	<b>13,688,450</b>
<b>24. REVENUE FROM EXCHANGE TRANSACTIONS</b>		
Other revenue: Exchange gain	-	1,765,265

		Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>25.</b>	<b>SALARIES AND EMPLOYEE BENEFITS</b>		
	Salaries and other benefits	263,720,605	259,529,303
	Employer's contribution		
	- Defined pension contribution (DPC)	72,135,821	58,545,251
	- Defined contribution scheme	3,869,828	3,314,049
	- Civil Service Family Protection Scheme	499,095	596,167
	- SICOM Family Protection Scheme	3,477,424	3,294,213
	- EWF / Levy	13,253,777	12,714,473
	- CSG	4,839,491	4,256,291
	Travelling and Transport	34,253,184	33,469,416
		<b>396,049,225</b>	<b>375,719,162</b>
	<b>25(a) Salaries and employee benefits</b>		
	Salaries	204,673,691	198,888,038
	Acting allowance	620,395	799,565
	Extra remuneration	9,070,230	4,332,400
	Overtime	3,914,384	3,654,384
	Other allowance	1,762,393	2,689,455
	End of year bonus	17,131,332	16,780,915
	Retirement / death benefits	4,485,689	4,722,741
	Passage benefits	8,362,179	8,855,300
	Sick leave	13,700,312	18,806,506
		<b>263,720,605</b>	<b>259,529,303</b>
<b>26.</b>	<b>SUPPLIES AND CONSUMABLES</b>		
	Office expenses	4,667,032	5,018,601
	Electricity, water and telephone	8,546,034	7,879,606
	Maintenance and running of vehicles	4,805,224	4,934,224
	Repairs and maintenance	6,485,793	7,932,845
	Uniforms and protective clothing	2,322,737	2,564,248
	Apparatus and supplies of laboratory	829,104	1,577,435
	On farm trial*	6,955	461,548
	Other operating expenses	2,808,447	2,322,936
	Seeds and plantlets	914,803	1,934,752
	Animal feed, drug and fodder	9,908,890	10,149,239
	Fertilizers and pesticides	2,644,410	2,919,368
	Small tools and equipment	1,038,019	517,793
		<b>44,977,447</b>	<b>48,212,594</b>

\* This relates to planting materials, tools, equipment, etc disbursed to farmers

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>27. DEPRECIATION AND AMORTISATION</b>		
Depreciation (Note 11)	21,155,688	17,845,893
Amortisation (Note13)	518,286	66,243
Depreciation	<b>21,673,974</b>	<b>17,912,136</b>
<b>28. OTHER EXPENSES</b>		
IT Expenses	972,704	737,237
Study Tours	2,646,583	2,627,648
Rent (Note 29)	1,216,063	1,215,363
Training of staff	358,537	450,102
Training of farmers	1,335,072	690,815
Collaborative links	453,701	415,147
Consultancy	2,838,911	633,081
Analysis and diagnostic fee	505,666	642,880
Security services	9,526,252	7,906,001
Subscription and fees	99,112	160,720
Legal and professional fees	1,080,700	1,769,230
Board members fee	955,875	1,416,118
Contribution to local organisation	230,362	220,840
Open Day and other events	789,998	574,390
Insurance	508,164	434,166
Books and publications	1,500	10,504
Exchange loss	848,040	-
Schemes	82,335,051	70,248,643
Expenses in connection with IAEA projects	8,709	5,590
	<b>106,710,997</b>	<b>90,158,475</b>
<b>29. OPERATING LEASE</b>		
Rent is paid for rental of office space as follows:		
a. Extension head office at St Pierre: 500 m <sup>2</sup>		
b. Goodlands sub-office: 27.2 m <sup>2</sup>		
c. Petite Rivière sub-office: 150 ft <sup>2</sup>		
d. Vacoas sub-office: 53.75 m <sup>2</sup>		
e. Long Mountain sub-office: 40.05 ft <sup>2</sup>		
f. Beau Champs sub-office: 16.17 m <sup>2</sup>		
g. Rivière du Rempart sub-office: 22.42 m <sup>2</sup>		
The future minimum lease payments under non-cancellable operating leases are as follows:		
	2024 Rs	2023 Rs
Up to one year	1,087,363	1,122,913
After one year and before five years	289,900	205,000
	<b>1,377,263</b>	<b>1,327,913</b>

	Year Ended June 2024 Rs	Year Ended June 2023 Rs
<b>30. KEY MANAGEMENT PERSONNEL COMPENSATION</b>		
The compensation paid to key management personnel is based on the recommendation of the Pay Research Bureau Report.		
The key management personnel of FAREI comprise Chairman, board members and directorate (Acting Chief Executive Officer and Assistant Directors).		
Key management personnel emoluments		
Chairman and board members	955,875	1,374,768
Directorate	6,444,819	6,149,820

### 31. CONTINGENT LIABILITIES

#### Pending Litigation

As at 30 June 2024, there was no litigation, claims, judgement, settlements or transactions or changes in the business activities and policies of the FAREI that might have significant effect on the FAREI's financial statement.

#### Bank Guarantee

As at 30 June 2024, the FAREI provided a guarantee in favour of the Mauritius Revenue Authority for the issue of a license to operate stills at the Plant Pathology Laboratory and the Soil Laboratory for Rs20,000.

### 32. EVENTS AFTER REPORTING DATE – IPSAS 14

There were no events after 30 June 2024 that would affect the financial position of FAREI.

## Section 7: Publications

### Fact/Recommendation Sheets/Bulletin

- Recommendation Sheet on Potato variety Everest: “A high yielding table potato variety”
- Recommendation sheet on chilli variety Senturi: “Anthracnose tolerant variety”
- Recommendation sheet on new anthurium variety Liberty
- Recommendation sheet on Management of *Cercospora* leaf spot and Basal rot disease in lettuce
- Recommendation sheet on Management of *Stemphylium* blight of Onion
- Fact sheet on King Oyster mushroom
- Disease Watch: Onion Downy mildew management
- Crop Watch bulletin: Prepared for Mauritius on the Cropwatch cloud platform in August and November 2023 and published under the section “Main producing and exporting countries: Mauritius”, in the Quarterly Reports on Global Crop Production Volumes 3 and 4 of 2023.

### Booklets

- Litchi tree management after harvest and rejuvenation
- Aquaponics
- Climate Smart Water and Energy Saving Technologies
- A Practical Guide to Agroforestry
- Common Predators of crop pests in Mauritius

### Scientific papers

#### Book of Abstracts, Second Edition Agricultural Science Exchange Forum 2023

- Huzar Fatty Beejan P.: Study of the performance of three coloured oyster mushrooms species evaluated for commercial purpose. Pg 27.
- Ellapen A., Seewoogoolam R., Aujayeb S. P. and Nowbuth R. D.: The potential and constraints of commercial aquaponics in Mauritius. Pg 2.
- Luchoomun Y.D., Ramtohul J., Bachoo M. K. Muthien D., Ramma I. and Lutchoomun S. : The Influence of temperature and rainfall on panicle emergence and fruit maturity in longan. Pg 24.
- Jhurry-Dussoruth B., Ramma I. and Lutchoomun S.: Mitigating risks from biotic stresses in banana plantations through diversification of varieties. Pg 9.
- Koopla V. and Lutchoomun S.: Dragon Fruit Cultivation as an Agribusiness in Mauritius. Pg 29.
- Vally V., Koyelas C., Hoolash Y., and Ranghoo-Sanmukhiya V. M.: Occurrence and detection of seed-borne organisms on onion seed in Mauritius. Pg 23

- Maunkee-Canthia V., Vally V., Naik N. and Ramma N.: Agronomic performance of a new taro variety (*Colocasia esculenta* var *esculenta*) with high yield and leaf blight tolerance. Pg 7.
- Kowlessur P., Unmole L. and Facknath S.: Occurrence of *Sipha flava* and its natural enemies on pasture grass, *Ischaemum aristatum*. Pg11.
- Peerboccus B. S., Unmole L., Victoire Caphane J. and Dooblad V.: Sustainable management of Diamond back moth in Cabbage cultivation. Pg14.
- Cadessa Y., Sauntally S. and Govinden-Soulange J.: Managing potato late blight using a combination of host resistance and reduced frequency of fungicide application. Pg 13.
- Sunassee S., Bélières J. F., Aujayeb S. P., Jouen E. and Lutchoomun S.: Study of the seed potato and bean seed sub-sectors in the potato and bean value chain in Mauritius. Pg 32.
- Awotarowa A. and Ramma I.: Locally bred Pea Varieties (*Pisum sativum* L.) with improved yield and agronomic performance. Pg 8.
- Beedassy S.K.: Detection of antibiotic residues in livestock products. Pg12.
- Gobindram N. E. M. and Ellapen R.: Quail farming in Mauritius: Situation Analysis and potential for contributing to local food security. Pg 30.
- Gobindram N.E.M., Lam Sheung Yuen R. and Ramtohol J. (2023). An Evaluation of various Feeding packages for rearing of rabbits. Pg 18.
- Keesoony A., Ramtohol J., Nursimmuloo L. and Lavigillante G.: An assessment of carcass quality of finished pigs available on the market in Mauritius. Pg 17.
- Lam Sheung Yuen R. and Nemorin B. (2023). Benefits of substituting whole milk by commercial milk replacer in the diet of pre-weaning calves. Pg33.
- Toolsee P. and Saraye G.: Dairy Value Chain in Mauritius- The Way Forward. Pg 16.
- Saddul D., Saraye G., Rawoah V. and Nemorin B.: Ensuring year-round availability of fodder for livestock: Local experience, challenges and opportunities. Pg 19.
- Aujayeb S P, Dookhan M, Seenevassen Pillay M S and Goolaub A.: Vulnerability assessment and analysis of the food-crop sector in Mauritius. Pg 21.
- Parepiah R. L.: A digital whole-farm management tool for sustainable crop production in Mauritius. Pg 4
- Erigadoo P. and Seenevassen Pillay M.: Enhancing resilience of the agricultural sector through DeSIRA Initiative. Pg 1
- Jaulim-Bissessur G. D.: Assessment of sustainability of dairy farming in Mauritius. Pg 20
- Mohee R. and Atawoo M. A.: Biological Nitrogen Fixation in Legumes: An assessment of the Extent and Opportunities for sustainable agriculture in Mauritius. Pg 10
- Girdharee S. and Gopaul A.: Organic Farming challenges in Mauritius: Case Study of Barlow Organic Farm. Pg 26
- Barorisen G.: Impact of Agro-Climatic conditions on seed yield of onion variety francia within the quality declared seed system. Pg 28

### Online publication

- Sunassee S (2003). Les semences dans la filière haricot à Maurice. Rapport de l'atelier de restitution du projet Food-Sec Semence. <http://www.agriculture-biodiversite-oi.org/Food-Sec-Semence/Ressources>

### Video

- Litchi tree pruning and its importance and proper timing was produced and uploaded. <http://www.youtube.com/@farei-videos9595>
- Implementation of IPM package in cabbage. <https://youtu.be/5J0L3Sbnoq4?si=JRx3s9mRMd9P9Ye1>
- Tools for implementing IPM. [https://farei.mu/farei2021/?page\\_id=943](https://farei.mu/farei2021/?page_id=943).

### Presentations

- “A ten-year status of Litchi phenological response to climatic variation in Mauritius”, by Mrs Y D Luchoomun.
- “Feeding the Future: Satellite Technology Transforming Agriculture” by Mr V Heerea 1st International Space Symposium on 18 April 2024 at Le Meridien Hotel, organised by the Mauritius Research and Innovation Council (MRIC),
- **Agro-entrepreneurship Week from 15-16 November 2023, FTS, Wooton**
  - “Business Opportunities in emerging agricultural sectors” by Mr. S.P. Aujayeb
  - “Value addition of dairy goat milk” by Dr. (Mrs) D. Saddul
  - “Value addition of fresh milk/milk processing” by Mr. S.K. Beedassy
  - “Agri-business Opportunities in Quail farming” by Dr. E. Gobindram
  - “Bread fruit cultivation and processing as an agri-business” by Mr. M. V. Koopla
  - “Production of avocado grafts as an opportunity for Agri-business” by Mrs. B. Dussoruth
  - “Tissue culture as a business venture” by Mrs. P. Greedharry
  - “Emerging sector-Opportunities in seaweed composting”, Mrs. R. Mohee
  - “Potential and constraints of Aquaponic” by Mr. R. Ellapen
  - “Mushroom agri-business opportunities” by Mrs. P. Beejan

### Poster presentation

#### 2<sup>nd</sup> Agricultural Science Exchange Forum 2023

- Cahoolessur N. D. and. Nowbuth R. D.: Performance of Swiss chard varieties (*Beta vulgaris* ssp. *Cicla* L.) as a new crop in Mauritius.
- Oogarah V., Subramaniam S., Vencatasamy N. and Nowbuth R. D.: Opportunities for producing gherkins as raw material for processed products.
- Gokool A. and Unmole L.: Integrated pest management of the tomato leaf miner, *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae in Mauritius).

- Bheekharry V.: Natural farming as climate resilient food production system in Mauritius.
- Maunkee-Cantiah V., Cadessa Y., Samputh K.D. and Parmessur Y.: Distinctness assessment of three recommended bean varieties (*Phaseolus vulgaris. L*) using morphological and molecular characterisation.
- Kauroo S. and Boodhram I.: Prospect of increasing potato seed production in Mauritius through introduction of rooted apical cutting technology using low-cost substrates.
- Gokool A. and Unmole L.: Integrated pest management of the tomato leaf miner, *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae in Mauritius).
- Dabee B.: Agronomic performance of three recommended onion varieties.
- Ramlugun V.: Promoting sustainable utilisation of local goat breed for liveweight improvement.
- Jouen E., Pecheur B., Vally V., Koyelas C., Robene I. and Lobin K. K.: LAMP molecular diagnostic technology and its implementation for potato seed certification in Mauritius.
- Sumboo M., Unmole L., Theeroovengadam N., Herve A., Arjane Z., Surnam B., Sauzier J. and Huat J.: Evaluating an integrated pest management (IPM) approach to control diamondback moth (DBM) in cabbage.
- Jaunkerparsad R. and Gopaul A.: Integrated pest management of Thrips tabaci in onion cultivation in the Eastern coastal areas of Mauritius.
- Dabee B.: Agronomic performance of three recommended onion varieties.

### Disease alerts

1. Late blight (*Phytophthora infestans*) management on potato and tomato
2. Powdery mildew and Phytophthora blight management (cucurbits, chili, tomato, lady's finger and potato)
3. Disease management post cyclonic weather
4. Twister disease (Anthracnose) caused by *Colletotrichum gloeosporioides* on onion -Symptom and management

### New pathogens detected

1. *Erysiphe neolycopersici*-Tomato
2. *Colletotrichum salsolae*-Papaya
3. *Colletotrichum fructicola*-Macadamia
4. *Colletotrichum queenslandicum*-Chilli

## Section 8: Senior Staff List from 01 July 2023 to 30 June 2024

### DIRECTORATE

#### CHIEF EXECUTIVE OFFICER

Asha Devi DOOKUN SAUMTALLY, BSc, MSc. PhD  
(with effect from 04 June 2024)

#### ACTING CHIEF EXECUTIVE OFFICER

Micheline SEENEVASSEN PILLAY, BSc  
(from 01 July 2023 to 03 June 2024)

#### ASSISTANT DIRECTORS

- Livestock Research Micheline SEENEVASSEN PILLAY, BSc
- Extension and Training Shri Swami A M GOOLAUB, BSc, MSc
- Crops Research Lalini UNMOLE, DMS, BSc, PhD

### MANAGEMENT

#### Technical and Scientific

#### CROP RESEARCH DEPARTMENT

- Agronomy Division  
Principal Research Scientist Indoomatee RAMMA, BSc, MSc
- Fruit Division  
Principal Research Scientist Satyabhama LUTCHOOMUN, BSc
- Vegetables and Ornamentals Division  
Principal Research Scientist Rita D NOWBUTH BSc, MSc
- Resource Management Division  
Principal Research Scientist Alfaz ATAWOO BSc, MSc
- Plant Pathology Division  
Principal Research Scientist Kanta Kumar LOBIN BSc, MSc, MBA, PhD  
(with effect from 06 July 2023)
- Entomology Division  
Principal Research Scientist Vishwanath DOOBLAD BSc, MSc
- Tissue Culture Laboratory  
Laboratory & Nursery Manager Kumari Indira D BOODHRAM BSc (H), Adv. Cert. MSc
- Agricultural Coordinators Soleman M Daldine JAUNBOCUS BSc, MSc  
Vijay Kumar BISSESSUR BSc, MSc

### LIVESTOCK DEPARTMENT

- Livestock Research Division  
Principal Research Scientist Parmessur TOOLSEE PG Dip, BSc, MBA

### EXTENSION AND TRAINING DEPARTMENT

- Crop Extension  
Principal Extension Officer Arvind R S SHIMADRY, BSc
- Training Division  
Principal Extension Officer Nankessor PRATAP, Dip. Agric
- Livestock Extension  
Principal Extension Officer Chaya TEELUCK, Dip Agri. & Sugar Tech, BTEC, MBA

### TECHNICAL SUPPORT SERVICES

- Biometry Section  
Principal Biometrician Macktoobah DOOKHAN, BSc  
(with effect from 12 June 2024)
- Engineering Section  
Principal Agricultural Engineer Vickram BUSSUNTH, BEng
- Business Development Section  
Research Scientist/ Senior Research Scientist Mahendre NATHOO, DMS, BSc, MSc

### ADMINISTRATION

- Finance Section  
Manager, Finance Bhindoomatee RADHA, ACMA
- Administrative Section  
Administrative Managers Suzy Dominique AUGUSTE, ACIS  
Arti DUNPUTH, ACIS
- Human Resource Section  
Human Resource Manager Avinash SEEBOCUS, BSc, MBA  
Human Resource Officer (Personal) Bindeshwaree VEERAPEN, DMS, BSc
- Procurement and Supply Section  
Stores Superintendent Veena Kumari HARDOWAR, BSc

## Section 9: Staff Mission and Training

### • MISSIONS

#### Directorate

Sri Swami Akhilandjee GOOLAUB

- Preparation of a master plan for the development of Agriculture in Agalega, 16 to 21 June 2024

### • MEETINGS, WORKSHOPS AND OTHERS

#### Directorate

Sri Swami Akhilandjee GOOLAUB

- Agricultural Fair Agritechnica 2023, Germany, 12 to 18 November 2023
- Virtual Extraordinary Summit, SADC Meeting, (Online), 13-14, 18-19 May 2024
- SADC Ministers Responsible for Agriculture, Food Security, Fisheries and Aquaculture Meeting, (Online), 15 to 17 May 2024

#### Lalini UNMOLE

- Conference on DP Biocontrôle and Epibio Project, Réunion, 11 to 13 December 2023
- Comité Régional d'orientations Stratégique et Technique de la PrÉRaD Océan Indien, Réunion, 02 to 04 April 2024

### CROP RESEARCH DEPARTMENT

#### • AGRONOMY DIVISION

#### Principal Research Scientist

Indoomatee RAMMA

- Conference: Germination Project, Réunion, 13 to 15 December 2023
- High level event on FAO Africa Small Island Developing (Online), 07 to 08 November 2023
- Scientific visit at Hebrew University of Jerusalem, Israel, 23 to 27 July 2023

#### Research Scientist/Snr Research Scientist

Sandeeren SUNASSEE

- Seed Regulation Regional Workshop, Madagascar, 26 to 28 July 2023

#### Krishtee Devi SAMPUATH

- Seminar on Cassava Industry Development in Developing Countries, China, 06 to 30 September 2023
- Study Tours under Tea Sector, Kenya, 03 to 10 December 2023

- **FRUIT DIVISION**

**Research Scientist/Senior Research Scientist**

Roop Soodha MUNBODH

- Seminar on Food Quality Management for Developing Countries, (Online), 10 to 19 July 2023

Veenayakraye KOOPLA

- Horticulture Crops for Food Security, AARDO, Training (Online), 09 to 13 October 2023

Premalee Vishwanath Rao Kadam Dhesmook RAMA-PATTOO

- Market access through Competency Based Education and Training in Horticulture (MACBETH) Short course: Online training of trainers on Managing Food Safety in Fresh Processed Fruit and Vegetable Value Chain (Online), 13 to 24 May 2024

- **VEGETABLE AND ORNAMENTALS DIVISION**

**Principal Research Scientist**

Rita NOWBUTH

- International Science and Technology Cooperation Forum on Genetic Resources Conservation and Utilization of Tropical Crops, Forum, China, 03 to 05 August 2023
- IAEA Scientific Visit - European Horticultural Congress (EVT2306938: MAR 5029), Romania, 12 to 16 May 2024

**Research Scientist/Senior Research Scientist**

Banumaty SARAYE

- 18<sup>th</sup> Eucarpia Meeting on Genetics and Breeding of Capsicum and Eggplant, Bulgaria, 18 to 21 September 2023 (DeSIRA project)
- 5 All Africa Horticultural Congress "Unlocking the potential of resilient horticulture in Africa", Morocco, 26 February to 01 March 2024

Priya Huzar Futtu-BEEJAN

- 16<sup>th</sup> Annual International Symposium on Agricultural Research, Greece, 10 to 13 July 2023
- IAEA Fellowship Training on Carrot Genotypic Screening and QTL Analysis, Poland, 10 June to 06 September 2024

- **RESOURCE MANAGEMENT DIVISION**

**Principal Research Scientist**

Mohammad Alfaz ATAWOO

- G20 Technical Workshop: Climate Resilient Agriculture, India, 04 to 06 September 2023

**Research Scientist/Senior Research Scientist**

Ram VENCATASAMY

- Preparation of a master plan for the development of Agriculture in Agalega, 16 to 21 June 2024
- RAF 5086-EVT2207685 Digital Platform for Agriculture Water Management through the Combination of Advanced Nuclear Techniques and Remote Sensing Technology, Egypt, 11 to 22 September 2023
- Training on Solar Water Pumping Systems at the Bhinge Brothers, India, 23 to 27 October 2023

Vishal BHEEKHARRY

- Study Tours under Tea Sector, Study Tour, Kenya, 03 to 10 December 2023

Rajeswaree DUMUR

- Midterm Coordination Meeting - Regional Project RAF5090, Egypt, 30 October 2023 to 02 November 2023
- ITEC "Fertilizer Quality Control", Training (Online), 19 February 2024 to 01 March 2024

Pratimah SEECHURN-POONPOON

- WMO RTC - Training and Technical Assistance in Agrometeorology and Related Topics, Italy, 31 July 2023 to 04 August 2023
- Solar Water Pumping Systems, Training (Online), 10 to 14 June 2024

• **PLANT PATHOLOGY DIVISION**

**Principal Research Scientist**

Kanta Kumar LOBIN

- International Congress of Plant Pathology, France, 20 to 25 August 2023
- Conference: DP Biocontrôle and Epibio Project, Reunion, 11 to 13 December 2023

**Research Scientist/Senior Research Scientist**

Vivian VALLY

- Seed Regulation Regional Workshop, Madagascar, 26 to 28 July 2023

**Assistant Research Scientist**

Yaminee HOOLASH

- Regional Training on Detection of Arsenic in Fishery Products, Seychelles, 06 to 10 May 2024

• **ENTOMOLOGY DIVISION**

**Research Scientist/Senior Research Scientist**

Leekcha Mattee Devi LALSING

- Vertebrate Pest Management - Wild Boar, Monkeys and Birds, Training (Online), 16 to 20 October 2023

Ashvin GOKOOL

- Training on rearing of Insect Pest and their associated parasitoids, Nairobi, 16 to 20 October 2023

Kaminibye NAOJEE

- Atelier Régional Technique et Scientifique du Projet APTAE-OI, Reunion, 06 to 08 September 2023

Preetam Kumar KOWLESSUR

- Black Soldier Fly Conference, UK, 11 to 12 September 2023

Bibi Shabinaz PEERBOCCUS

- XII European Congress of Entomology, Greece, 16 to 20 October 2023

**Assistant Research Scientist**

Maire Jenny CAPHANE-VICTOIRE

- Training on rearing of Insect Pest and their associated parasitoids, Nairobi, 16 October 2023 to 20 October 2023

- **TISSUE CULTURE LABORATORY**

**Laboratory and Nursery Manager**

Kumari Indira Devi BOODHRAM

- Innovative Tissue Culture Techniques for Plant Propagation, DeSIRA, France, 18 September 2023 to 22 September 2023

**Research Scientist/Senior Research Scientist**

Pratima GREEDHARRY

- 8<sup>th</sup> Edition of the Global Conference on Plant Science and Molecular Biology, Conference, Spain, 11 to 13 September 2023

- **BIOFARMING UNIT**

**Extension Officer/ Senior Extension Officer**

Ansuya DHURUMSING-DOHAROO

- New Technology of Quality and Safety in Tropical Agro-Products for Developing countries, China, 08 to 27 August 2023
- Atelier Régional Technique et Scientifique du Projet APTAE-OI, Reunion, 06 to 08 September 2023

**LIVESTOCK RESEARCH DEPARTMENT**

- **Livestock Research Division**

**Principal Research Scientist**

Parmessur TOOLSEE

- Regional National Coordinators' Workshop for Animal Genetic Resources, Kenya, 21 to 23 May 2024

**Research Scientist/Snr Research Scientist Livestock Research**

Devika SADDUL

- Scientific Visit at Agriculture Research Ltd, Czech Republic, 05 to 15 September 2023
- RAF5090 "Support Climate Change Adaptation for Communities through Integrated Soil Cropping Livestock Production Systems (AFRA) Meeting, Egypt, 30 October 2023 to 02 November 2023

Geerjanand SARAYE

- Scientific Visit - Feed Formulation, Feed Analysis and Processing Technologies, DeSIRA, 26 September 2023 to 05 October 2023

Mohammad Noor Ehsan Newaz GOBINDRAM

- Training/Study Tour at the University of Western Australia. "Clean, Green and Ethical (CGE) Concepts in Livestock Production", Australia, 19 to 27 September 2023

Regis K M LAM SHEUNG YUEN

- Scientific Visit at Stellenbosch University, South Africa, 23 to 27 October 2023

Louis Bernard NEMORIN

- Seminar on Processing Technology for Agricultural Livestock Products for Developing Countries, China, 11 to 31 October 2023

## CROP AND LIVESTOCK STATIONS

### Agricultural Coordinator

Vijay Kumar BISSESSUR

- ITEC - AgriTech Startups for Enhancing the Agri Value, India, 17 to 30 January 2024

### Station/Laboratory Manager

Akash DOOBOREE

- Integrated Vertebrate Pest Management, India, 10 to 23 July 2024

Muhammad Iqbal JACMOHUN

- Training Programme on "Use of Poor Quality Waters in Agriculture", India, 15 to 26 November 2023

### Assistant Research Scientist

Rajiv BHOLAH

- Skills Development Tropical Fruit Cultivation in Organic Agriculture and Integrated Farming for Sustainable Development Training (Online), 04 to 16 June 2024

Naziihah MAULABOKSH MAHABALLY

- Application of Nanotechnology in Plant Growth and Crop Protection for Sustainable Agriculture, India, 10 to 19 November 2023

Mithilesh SHIBCHURN

- Seminar - Dairy Product and Food Processing Technology for Developing Countries, China, 15 to 28 April 2024

## EXTENSION AND TRAINING DEPARTMENT

### • Crop Extension Division

#### Extension Officer/ Senior Extension Officer

Chandrabose SEMBHOO

- Management of Pesticides and their Residues for the Protection of Food Crops, India, 16 to 29 January 2024

Rogheenee ELLAPEN

- Starting Small Food Processing Enterprises in Millets Value Chain For Women and Youth, India, 11 February 2024 to 02 March 2024

Neeruj CAHOOLESSUR

- Seminar on Management of Agricultural Technology Demonstration Centres for Development Countries, China, 16 to 29 April 2024

Sivani RAMDEWOR JOOTTUN

- Seminar on Production Application and Demonstration of Eco-Friendly Fertilizer for Developing Countries, China, 11 to 31 October 2023

Ishwardeo BEEHARRY

- Seminar on Promotion and Trade of Agricultural Products for Developing Countries, China, 06 to 26 July 2023

- **INFORMATION AND TRAINING DIVISION**

**Extension Officer/ Senior Extension Officer**

Reshma BALGOBIN-BASENOO

- Tropical Fruit Production and Processing Techniques in Developing Countries, China, 08 August 2023 to 01 September 2023

Varsha JADOO

- New Technology of Quality and Safety in Tropical Agro-Products for Developing countries, 08 to 27 August 2023

- **LIVESTOCK EXTENSION DIVISION**

**Extension Officer/ Senior Extension Officer**

Sacheedanand JAMODHEE

- Dairy Production in a Low-Carbon Future, MASHAV, Israel, 17 July 2023 to 03 August 2023

Dineshsing RAMLUGUN

- Digital Transformation and Development of Agriculture and Rural Areas in Developing Countries, China, 18 October to 07 November 2023

Dhanishta Devi SUMPUTH-NUNDLOLL

- Seminar on Agriculture and Animal Husbandry Development for Developing Countries, China, 07 September 2023 to 27 September 2023

**TECHNICAL SUPPORT SERVICES**

- **ENGINEERING DIVISION**

**Principal Agricultural Engineer**

Vickram BUSSUNTH

- ISA Online training on Solar Water Pumping Systems under ISA Programme 01 - Scaling Solar Applications for Agriculture Use, China, 18 to 22 March 2024

**Agricultural Engineer/ Senior Agricultural Engineer**

Pravesh Kumar BEEDASEE

- ISA Online training on Solar Water Pumping Systems under ISA Programme 01 - Scaling Solar Applications for Agriculture Use (Online), 18 to 22 March 2024

- **ADMINISTRATION**

**Human Resource Officer (Personal)**

Bindeshwaree VEERAPEN

- Business and Human Rights Workshop (online), 25 September 2023

## Section 10: Statistics

### Production for 2023 - 2024

Food Crops production of some sixty crops were recorded through ongoing surveys carried out throughout the Island of Mauritius in both open field and protected cultures during the financial year 2023-2024. Production in open field remained the prevalent system of production. At the same time, there has been a continuous growth in food crops production in sheltered farming. This should be attributed to ongoing government incentives under the Sheltered Farming Scheme, in the form of grant for many years now. Sheltered farming offers some considerable advantages over open field like increased protection against bad weather, more resilience to climate change, better control on pests and diseases, quality produce which are appealing to customers and significantly higher yields.

Climatic conditions play a crucial role in food crops production. The main meteorological event that marked this financial year happened in January 2024. During that month, two tropical storms, Belal and Candice, were formed. Cyclone Belal brought strong gusts and very high precipitation causing floods in many parts of the country. January 2024 turned out to be the fourth wettest month in the last 30 years with a precipitation of 574 mm representing 204% of the LTM (1991-2020) - long term mean for period 1991-2020. This event has resulted in structural damage to protected cultures and drop of food crops' production in both the open field and protected culture for at least the first quarter of the year 2024. It has also to be pointed out that winter period from July to September 2023 was warmer than the normal. This had a negative effect on the productivity of crops like potato, onion and garlic. September and October 2023 were dry months receiving only 48 and 54 mm of rain representing 56% and 74% of LTM (1991-2020) while months of November and December 2023 were wet with 286 and 293 mm recorded respectively.

Food crops production was estimated to be around 163,136 tonnes for the 60 crops reported. Area harvested for major crops, i.e. food crops published by Statistics Mauritius in the Digest of Agriculture, was estimated at 9,126 hectares with a production of 146,191 tonnes. This represents a significant rise from the last financial year 2022/2023 when area harvested and production were 8,044 hectares and 121,280 tonnes respectively. Minor food crops, i.e. food crops not published in the Digest of Agriculture, accounted for some 6,448 tonnes from a harvested area of approximately 545 hectares. In protected cultures, consisting mainly of hydroponics system, around 105 hectares were harvested yielding some 10,481 tonnes of food crops. Tomato, Cucumber, lettuce and Sweet Pepper remain the main crops planted under protective cover representing 93% and 98% of total area harvested and total production respectively. It is worth noting that 7,430 tonnes of tomato were produced in sheltered farming.

Strategic food crops – potato, onion and carrot - were grown in open field. Some 13,774 tonnes of potato were harvested over an area of 738 hectares while 5,436 tonnes of onion were produced from cultivated area of 384 hectares. Carrot production reached 7,413 tonnes from harvested area of 465 hectares while 11,638 tonnes of tomato were produced in open field from 539 hectares harvested. Creepers, which include bittergourd, calabash, chouchou, courgette, cucumber, patole, pipengaille, pumpkin and squash, were harvested over an area of some 2,387 hectares with a production of approximately 37,824 tonnes. The production of cruciferous vegetables comprising, broccoli, cabbage, cauliflower and petsai was estimated at 17,156 tonnes for a harvested area of 563 hectares.

### Monthly Area harvested of food crops (Whole Island) – July 2023 to June 2024

	Area (ha)												Total (ha)
	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
Open Field - Major food crops	758.33	858.05	962.32	1,098.65	970.10	825.05	587.68	527.56	483.42	588.51	698.68	767.62	<b>9,125.98</b>
Open Field - Minor food crops	32.86	39.90	39.79	37.41	76.09	102.83	40.47	43.20	26.16	30.76	35.65	39.95	<b>545.05</b>
Protected Cultures (Hydroponics & Soil Cultures)	8.71	9.15	9.17	9.57	9.24	8.89	8.49	7.62	7.88	8.94	9.13	8.74	<b>105.55</b>
<b>Total (ha)</b>	<b>799.90</b>	<b>907.10</b>	<b>1,011.29</b>	<b>1,145.63</b>	<b>1,055.44</b>	<b>936.77</b>	<b>636.64</b>	<b>578.38</b>	<b>517.46</b>	<b>628.22</b>	<b>743.46</b>	<b>816.30</b>	<b>9,776.58</b>

N.B. - (1) Major food crops are published in the Digest of Agricultural Statistics - a SM publication - unlike minor food crops.

(2) All recorded crops grown in protected cultures are taken into account, including food crops not published in the Digest of Agriculture.

### Monthly Production of food crops (Whole Island) – July 2023 to June 2024

	Prod. (t)												Total (t)
	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
Open Field - Major food crops	13,318	14,845	16,537	18,960	16,638	13,629	6,497	6,227	6,481	8,465	11,379	13,215	<b>146,191</b>
Open Field - Minor food crops	382	421	402	418	1,003	1,317	421	399	282	360	446	598	<b>6,448</b>
Protected Cultures (Hydroponics & Soil Cultures)	932	1,000	1,024	990	947	969	674	496	505	809	1,058	1,093	<b>10,498</b>
<b>Total (t)</b>	<b>14,632</b>	<b>16,266</b>	<b>17,963</b>	<b>20,368</b>	<b>18,587</b>	<b>15,915</b>	<b>7,592</b>	<b>7,122</b>	<b>7,269</b>	<b>9,634</b>	<b>12,884</b>	<b>14,905</b>	<b>163,136</b>

N.B. (1) Major food crops are published in the Digest of Agricultural Statistics - a SM publication - unlike minor food crop s.

(2) All recorded crops grown in protected cultures are taken into account, including food crops not published in the Digest of Agriculture.

### Monthly Area harvested of major food crops (Whole Island) for the period July 2023 to June 2024

Major Food Crops	Area (ha)												Total (ha)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Banana	54.04	54.43	54.26	54.34	55.28	55.95	56.43	57.10	61.93	65.22	63.61	64.13	696.71
Bean	30.44	32.40	32.43	32.31	22.91	23.76	15.11	18.00	9.32	20.09	29.25	20.36	286.35
Beet	2.73	3.87	4.87	4.09	2.14	2.39	3.94	2.81	1.38	2.12	2.42	2.36	35.13
Bittergourd	21.33	22.72	18.58	18.68	16.86	17.03	12.03	9.99	9.65	12.42	17.85	22.48	199.62
Brinjal (A)	8.00	7.95	8.38	7.88	7.19	7.16	6.01	5.48	5.43	6.05	6.95	6.36	82.83
Brinjal (C)	22.88	26.07	26.96	28.54	28.02	25.68	19.71	15.74	14.36	15.35	18.30	18.20	259.82
Broccoli	4.89	7.01	7.37	6.59	2.45	2.69	1.19	0.10	-	0.13	0.58	3.36	36.36
Cabbage	49.80	27.35	35.55	28.85	24.15	27.05	24.73	22.68	23.19	24.91	39.39	40.70	368.35
Calabash	41.46	34.90	38.16	35.86	32.86	35.34	32.31	25.76	24.01	29.97	47.02	54.98	432.61
Carrot	38.84	37.99	54.21	31.32	39.31	31.34	23.14	29.19	45.91	45.94	36.49	51.22	464.89
Cauliflower	15.29	17.72	15.33	13.50	8.53	9.45	7.70	4.59	2.70	1.81	4.99	9.81	111.42
Chillies (C)	5.18	6.49	7.03	6.63	5.62	5.17	5.16	4.40	5.27	5.87	6.45	6.48	69.75
Chillies (L)	20.21	21.85	22.57	24.49	24.61	24.38	16.89	15.52	14.45	15.01	15.69	16.76	232.44
Chillies (S)	6.09	5.94	6.09	5.96	6.16	6.24	4.71	4.40	4.37	4.43	4.37	4.02	62.77
Chouchou	11.03	12.00	18.48	18.81	22.48	27.76	28.13	28.02	27.63	23.98	22.65	21.46	262.41
Courgette	1.84	3.06	1.89	2.53	1.77	3.67	2.01	2.23	1.41	2.59	3.31	3.96	30.24
Cucumber	35.34	31.60	30.13	25.50	29.02	32.28	27.09	27.02	21.16	24.91	34.19	34.50	352.71
Echalote	16.87	23.32	19.21	18.21	20.68	27.03	24.85	11.32	16.68	25.00	34.58	34.06	271.81
Eddoes (C)	7.39	6.69	13.88	17.92	18.52	17.32	17.37	12.16	11.31	10.73	2.96	2.61	138.86
Eddoes (V)	7.06	4.75	8.54	7.54	10.38	13.38	7.62	8.14	5.29	8.52	7.57	8.52	97.30
Garlic	0.32	1.60	6.53	1.78	1.62	-	-	-	-	-	-	-	11.85
Ginger	0.06	6.27	10.62	26.87	23.45	0.34	0.34	-	-	-	-	20.90	88.85
Green Peas	-	0.13	0.04	0.12	-	-	-	-	-	-	-	-	0.29
Greens	32.18	30.39	26.61	26.65	27.87	27.70	26.99	23.01	19.34	29.62	39.63	38.30	348.28
Groundnut	13.67	9.84	8.97	8.11	13.88	15.61	10.48	13.94	12.24	11.02	8.64	12.05	138.45

N.B. - (1) All figures reported refer to open field production

(2) Major food crops refer to list of crops that are published in 'Digest of Agricultural Statistics'

Legend: '-' denotes nil

Monthly Area harvested of major food crops (Whole Island) for the period July 2023 to June 2024

Major Food Crops	Area (ha)												Total (ha)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Ladies Finger	17.70	17.82	17.14	16.23	15.96	14.95	11.87	11.34	11.19	12.15	13.85	14.19	174.38
Leek	1.88	1.61	2.03	1.63	0.54	1.36	1.28	2.51	1.16	1.21	1.39	1.83	18.43
Lettuce	21.28	20.43	22.65	21.06	20.67	19.90	16.58	18.44	11.89	26.96	31.95	25.75	257.56
Maize	14.06	13.68	13.00	16.18	15.88	9.39	5.68	3.70	2.68	12.24	6.44	8.17	121.10
Manioc	5.06	4.74	6.86	10.15	10.87	9.88	7.91	6.83	6.30	6.95	6.73	7.31	89.59
Onion	-	16.28	88.30	146.45	98.85	29.61	4.60	-	-	-	-	-	384.09
Patole	11.46	9.69	9.89	8.51	6.85	7.59	5.97	6.53	5.05	7.68	10.81	9.72	99.75
Petsai	4.70	4.76	3.66	4.53	2.68	2.70	2.37	3.12	1.30	4.38	6.60	5.65	46.45
Pineapple	21.62	22.07	26.09	34.81	30.92	35.46	33.54	20.84	22.25	21.49	20.19	25.22	314.51
Pipengaille	16.64	14.19	13.22	9.09	8.96	11.95	11.32	8.56	6.49	9.98	13.51	12.30	136.20
Potato	40.73	133.17	107.89	213.72	166.23	75.54	0.73	-	-	-	-	-	738.02
Pumpkin	78.79	82.23	73.12	65.35	64.58	78.91	56.02	46.85	42.86	49.90	72.28	75.36	786.23
Squash	11.64	13.12	11.87	11.41	5.58	8.67	3.63	2.62	0.74	4.20	5.06	8.23	86.74
Sweet Pepper	-	-	-	-	-	-	0.57	-	-	-	0.29	0.50	1.35
Sweet Potato	4.39	4.70	20.26	18.95	9.25	12.84	11.84	15.37	8.99	7.29	5.85	12.15	131.87
Tomato	49.79	50.15	57.22	56.53	56.32	57.74	32.94	29.55	17.84	29.81	46.23	55.22	539.34
Voëhm	11.67	13.08	12.45	10.97	10.22	9.88	6.92	9.71	7.69	8.61	10.64	8.47	120.28
<b>Total</b>	<b>758.33</b>	<b>858.05</b>	<b>962.32</b>	<b>1,098.65</b>	<b>970.10</b>	<b>825.05</b>	<b>587.68</b>	<b>527.56</b>	<b>483.42</b>	<b>588.51</b>	<b>698.68</b>	<b>767.62</b>	<b>9,125.98</b>

N.B. - (1) All figures reported refer to open field production

(2) Major food crops refer to list of crops that are published in 'Digest of Agricultural Statistics'

Legend: '-' denotes nil

### Monthly Production of major food crops (Whole Island) for the period July 2023 to June 2024

Major Food Crops	Area (ha)												Total (t)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Banana	861.20	852.83	851.26	883.49	910.98	912.33	619.38	628.75	745.48	778.15	895.97	934.73	9,874.55
Bean	284.99	284.73	309.77	244.75	225.24	229.08	51.75	85.79	60.77	147.03	236.85	162.84	2,323.60
Beet	88.04	124.27	154.93	116.85	60.23	64.18	44.65	43.55	24.44	35.36	52.61	65.67	874.78
Bittergourd	152.53	183.53	148.71	163.05	172.66	123.72	42.37	39.00	52.15	69.86	101.13	122.30	1,371.01
Brinjal (A)	46.29	55.52	60.76	59.24	54.82	54.03	32.16	34.49	39.57	43.31	47.45	46.19	573.82
Brinjal (C)	322.73	443.24	470.44	521.96	549.60	520.77	212.30	179.69	235.00	268.82	337.91	335.56	4,398.03
Broccoli	58.29	98.86	99.52	91.51	33.12	24.91	8.47	0.59	-	2.16	6.40	62.58	486.41
Cabbage	2,203.83	1,135.23	1,382.70	1,025.19	879.95	889.92	563.33	629.51	636.46	858.89	1,373.71	1,716.26	13,294.97
Calabash	628.12	543.47	604.73	624.21	570.24	588.06	266.30	286.82	345.36	433.62	740.05	838.26	6,469.23
Carrot	709.95	691.02	903.20	488.73	757.10	583.65	296.45	361.35	597.75	604.14	569.68	849.64	7,412.67
Cauliflower	310.99	375.70	301.54	268.41	167.73	176.85	132.76	93.18	51.13	34.70	94.34	208.12	2,215.45
Chillies (C)	33.75	44.73	52.05	52.31	51.99	46.33	31.14	25.12	30.48	41.96	52.62	50.31	512.79
Chillies (L)	173.35	201.46	207.09	244.82	225.57	226.31	94.02	91.87	109.47	120.42	124.83	138.95	1,958.17
Chillies (S)	39.74	39.10	41.00	43.58	39.14	37.97	17.93	16.88	21.36	21.76	21.47	17.06	356.98
Chouchou	223.50	226.98	375.69	383.18	397.04	461.48	319.65	375.70	440.71	413.87	392.03	388.28	4,398.10
Courgette	45.12	71.88	42.37	41.43	23.93	53.34	12.28	20.78	11.37	26.08	42.71	58.91	450.17
Cucumber	632.00	500.75	479.31	454.13	538.51	612.01	254.48	334.89	308.96	399.37	645.19	643.65	5,803.26
Echalote	245.92	352.36	281.22	276.56	332.89	430.47	251.67	108.28	247.26	387.12	534.64	517.53	3,965.91
Eddoes (C)	71.74	65.70	135.08	175.36	184.54	172.64	172.71	118.08	110.78	106.06	28.56	25.27	1,366.52
Eddoes (V)	97.70	66.55	114.23	112.58	153.68	184.32	103.03	111.64	73.77	134.52	122.81	136.01	1,410.85
Garlic	1.12	8.66	32.02	5.95	4.03	-	-	-	-	-	-	-	51.79
Ginger	0.78	141.25	240.40	583.33	537.67	5.96	3.78	-	-	-	-	501.60	2,014.77
Green Peas	-	0.77	0.19	0.71	-	-	-	-	-	-	-	-	1.67
Greens	415.53	277.14	284.92	285.79	319.07	342.82	161.41	148.38	209.87	322.84	437.33	407.08	3,612.18
Groundnut	32.44	25.61	25.26	19.90	28.33	39.73	14.65	32.91	23.39	24.81	21.06	22.98	311.07

### Monthly Production of major food crops (Whole Island) for the period July 2023 to June 2024

Major Food Crops	Area (ha)												Total (t)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Ladies Finger	181.31	175.02	157.64	126.37	126.77	134.39	61.72	65.81	93.52	120.24	141.78	135.40	1,519.96
Leek	26.20	25.57	32.82	26.82	8.74	20.00	13.68	24.27	6.30	10.50	11.57	20.03	226.50
Lettuce	332.43	426.16	407.57	390.81	393.66	389.67	179.02	229.86	185.58	353.85	507.74	411.10	4,207.45
Maize	185.75	170.91	152.35	168.09	208.65	128.98	49.13	34.37	32.31	142.38	96.98	110.82	1,480.72
Manioc	83.84	94.80	132.88	200.90	213.60	196.31	140.78	120.12	125.10	140.42	145.17	143.35	1,737.27
Onion	-	174.79	1,293.97	2,156.62	1,392.92	368.31	49.68	-	-	-	-	-	5,436.28
Patole	108.73	99.61	107.40	90.82	84.85	72.41	43.27	45.08	42.54	67.30	95.07	76.76	933.84
Petsai	130.75	137.17	101.56	137.75	71.41	70.06	38.14	66.65	23.90	98.77	153.43	129.15	1,158.73
Pineapple	433.13	439.57	517.01	708.83	643.60	736.10	625.22	367.68	415.67	410.24	407.62	457.68	6,162.34
Pipengaille	244.17	206.60	200.17	141.96	149.51	179.24	96.89	73.74	72.53	127.62	189.50	176.84	1,858.76
Potato	718.35	2,705.72	2,184.23	4,087.46	2,843.72	1,219.81	15.15	-	-	-	-	-	13,774.43
Pumpkin	1,789.68	1,796.42	1,598.40	1,519.07	1,459.73	1,449.71	744.13	607.86	624.00	956.19	1,550.25	1,631.25	15,726.69
Squash	111.54	126.48	125.29	119.36	60.59	85.75	19.88	14.31	4.73	33.59	44.57	66.90	813.00
Sweet Pepper	-	-	-	-	-	-	3.37	-	-	-	2.00	3.50	8.88
Sweet Potato	91.00	90.97	401.10	397.12	175.26	270.69	187.60	252.89	125.48	105.34	103.18	213.94	2,414.57
Tomato	1,070.33	1,187.78	1,352.97	1,354.71	1,418.22	1,382.89	462.15	471.47	258.35	504.02	905.71	1,269.31	11,637.93
Voëhm	131.14	176.11	173.00	166.19	168.48	143.39	61.03	85.43	95.97	120.17	145.45	118.83	1,585.20
<b>Total</b>	<b>13,318.01</b>	<b>14,845.02</b>	<b>16,536.74</b>	<b>18,959.90</b>	<b>16,637.74</b>	<b>13,628.60</b>	<b>6,497.49</b>	<b>6,226.82</b>	<b>6,481.50</b>	<b>8,465.45</b>	<b>11,379.36</b>	<b>13,214.66</b>	<b>146,191.29</b>

N.B. - (1) All figures reported refer to open field production

(2) Major food crops refer to list of crops that are published in 'Digest of Agricultural Statistics'

Legend: '-' denotes nil

### Monthly Area harvested of minor foodcrops (Whole Island) - July 2023 to June 2024

Minor Food Crops	Area (ha)												Total (ha)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Bokla/Chinese Peas	0.33	0.21	1.33	0.56	0.32	0.39	-	-	-	-	-	-	3.14
Butternut	0.11	0.10	0.06	0.76	0.59	0.33	0.66	0.32	0.00	0.20	0.38	0.46	3.95
Fine Herbs:	22.03	25.06	29.46	21.66	22.59	22.52	12.31	13.00	8.66	21.93	23.09	25.81	248.12
Celery	1.49	2.29	2.08	1.74	1.27	1.10	2.04	1.46	0.42	1.89	2.06	2.37	20.21
Coriander	18.71	20.04	25.15	17.36	19.61	18.57	8.22	8.57	6.77	17.74	17.05	19.95	197.75
Parsley	0.71	1.51	1.22	1.51	0.59	1.16	0.83	1.82	0.43	1.39	2.58	2.17	15.92
Thyme	1.08	1.22	1.00	1.03	1.11	1.68	1.21	1.14	1.03	0.89	1.38	1.32	14.09
Other fine herbs	0.04	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.15
Fruits:	3.52	7.15	2.86	6.83	46.53	63.86	17.55	16.24	14.42	3.46	4.95	2.84	190.21
Melon	1.39	2.23	0.04	-	4.15	4.19	0.20	0.20	0.20	-	-	-	12.60
Pawpaw	0.45	0.72	0.72	1.81	2.31	1.71	0.49	1.20	1.12	1.43	1.15	1.16	14.27
Pitaya	-	-	-	-	-	-	-	-	-	0.03	0.01	-	0.04
Watermelon	1.68	4.20	2.10	5.02	40.08	57.97	16.86	14.84	13.10	2.00	3.78	1.68	163.30
Patate Chinois	3.21	2.33	2.82	4.28	3.66	6.64	6.93	7.08	1.12	2.50	2.86	6.35	49.77
Radish	0.89	0.62	0.88	0.76	0.74	0.76	0.80	1.91	0.02	0.34	0.59	0.35	8.66
Rave	1.28	0.67	1.01	1.04	0.49	1.47	1.17	2.99	0.25	0.66	1.98	2.19	15.20
Watercress	1.49	3.76	1.38	1.52	1.18	6.86	1.05	1.66	1.69	1.69	1.80	1.85	25.91
Waxgourd	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11
<b>Total</b>	<b>32.86</b>	<b>39.90</b>	<b>39.79</b>	<b>37.41</b>	<b>76.09</b>	<b>102.83</b>	<b>40.47</b>	<b>43.20</b>	<b>26.16</b>	<b>30.76</b>	<b>35.65</b>	<b>39.95</b>	<b>545.05</b>

N.B. - (1) All figures reported refer to open field production. (2) Minor food crops refer crops that are not published in the 'Digest of Agriculture'

Legend: '-' denotes nil

### Monthly Production of minor foodcrops (Whole Island) - July 2023 to June 2024

Minor Food Crops	Area (ha)												Total (t)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Bokla/Chinese Peas	0.76	0.73	4.17	1.65	0.82	1.50	-	-	-	-	-	-	9.63
Butternut	1.25	1.12	0.69	6.68	6.22	4.67	5.26	2.99	0.00	1.72	3.74	5.21	39.54
Fine Herbs:	157.36	187.19	232.32	160.38	178.16	161.69	36.46	54.55	54.95	144.55	164.46	179.01	1,711.10
Celery	5.84	8.49	8.17	6.66	4.47	4.40	3.63	4.59	1.52	7.12	7.82	8.23	70.94
Coriander	145.64	169.77	215.44	143.26	167.67	144.55	27.71	42.67	48.42	131.51	136.77	160.60	1,534.02
Parsley	1.96	5.19	5.24	6.91	2.26	7.87	2.00	4.42	2.21	3.36	10.88	5.51	57.80
Thyme	3.60	3.74	3.35	3.43	3.64	4.76	3.00	2.75	2.68	2.44	8.88	4.66	46.92
Other fine herbs	0.32	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.00	1.42
Fruits:	69.43	140.54	69.55	118.42	705.09	887.74	223.62	163.08	156.39	72.11	111.48	71.46	2,788.92
Melon	20.44	29.80	0.23	-	67.00	54.93	4.00	4.00	4.00	-	-	-	184.39
Pawpaw	15.39	26.74	27.32	24.70	27.60	28.85	25.79	46.48	36.69	35.51	37.17	37.63	369.87
Pitaya	-	-	-	-	-	-	-	-	-	0.60	0.39	-	0.99
Watermelon	33.60	84.00	42.00	93.72	610.49	803.97	193.84	112.60	115.70	36.00	73.92	33.84	2,233.66
Patate Chinois	126.41	57.80	70.05	107.00	91.50	166.00	138.60	141.60	56.00	125.00	143.00	317.50	1,540.45
Radish	8.17	1.72	9.00	7.90	7.70	7.74	6.74	16.57	0.02	2.79	4.96	2.88	76.18
Rave	4.71	2.71	3.90	3.39	1.59	7.40	3.11	7.92	1.72	2.32	6.04	7.03	51.83
Watercress	13.64	28.87	12.31	12.90	11.76	80.25	6.95	12.40	12.70	11.32	12.29	12.33	227.72
Waxgourd	-	-	-	-	-	-	-	-	-	-	-	2.31	2.31
<b>Total</b>	<b>381.74</b>	<b>420.67</b>	<b>401.97</b>	<b>418.33</b>	<b>1,002.83</b>	<b>1,316.99</b>	<b>420.73</b>	<b>399.10</b>	<b>281.79</b>	<b>359.80</b>	<b>445.98</b>	<b>597.73</b>	<b>6,447.68</b>

N.B. - (1) All figures reported refer to open field production. (2) Minor food crops refer crops that are not published in the 'Digest of Agriculture'

**Area harvested of food crops in protected cultures for the period July 2023 to June 2024  
(Provisional)**

Protected Cultures	Area (ha)												Total (ha)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Hydroponics	8.49	8.82	8.72	9.32	9.08	8.68	8.25	7.58	7.58	8.62	8.98	8.37	102.50
Soil Culture	0.22	0.33	0.46	0.25	0.16	0.21	0.14	0.02	0.13	0.28	0.13	0.20	2.55
<b>Total(ha)</b>	8.71	9.15	9.17	9.57	9.24	8.89	8.39	7.60	7.72	8.90	9.12	8.57	105.05

**Production of food crops in protected cultures for the period July 23 to June 24  
(Provisional)**

Protected Cultures	Production (t)												Total (t)
	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	
Hydroponics	923.87	989.21	1,010.20	984.64	943.03	963.97	669.82	494.88	501.33	802.80	1,054.96	1,080.03	10,418.74
Soil Culture	8.04	11.02	13.62	5.56	3.68	5.49	1.69	0.60	1.68	5.25	2.56	3.24	62.42
<b>Total (t)</b>	931.91	1,000.23	1,023.81	990.20	946.71	969.46	671.51	495.48	503.01	808.05	1,057.52	1,083.26	10,481.16

### Livestock Statistics as at June 2024

District	Cattle		Goat		Sheep		Pig		*Broilers		*Layers		Rabbit		Duck	
	No. of farmers	No. of heads	No. of farmers	No. of heads	No. of farmers	No. of heads	No. of farmers	No. of heads	No. of farmers	No. of Broilers	No. of farmers	No. of Layers	No. of farmers	No. of heads	No. of farmers	No. of heads
Pamplemousses	66	408	262	3,013	74	864	14	320	32	71,840	17	153,107	7	109	14	337
Riviere du Rempart	102	717	397	4,972	93	943	19	318	58	273,603	12	6,406	32	196	93	1,124
Flacq	80	400	465	5,936	64	720	65	3,155	102	467,296	25	19,661	39	366	95	1,504
Grand Port	44	246	184	2,871	30	491	31	743	34	183,905	14	14,523	8	140	14	428
Savanne	39	1,237	152	2,427	61	620	11	259	37	412,100	13	217,350	9	193	7	240
Plaines Wilhems	43	500	108	1,386	40	442	13	197	27	134,775	5	5,505	5	93	5	119
Moka	22	260	34	333	11	139	0	0	25	51,575	10	17,673	3	83	3	67
Black River/Port Louis	62	495	220	3,222	58	1,210	296	17,964	28	151,024	26	8,854	22	162	47	1,640
<b>Total</b>	<b>458</b>	<b>4,263</b>	<b>1,822</b>	<b>24,160</b>	<b>431</b>	<b>5,429</b>	<b>449</b>	<b>22,956</b>	<b>343</b>	<b>174,6118</b>	<b>122</b>	<b>443,079</b>	<b>125</b>	<b>1,342</b>	<b>278</b>	<b>5,459</b>

\* excluding corporate sector