

Objectives of the project

The overall objective of the action is to strengthen the capacity of the Faculty of Agriculture, University of Mauritius in research and training to promote sustainable agriculture for improved food security in response to climate change. The specific objectives are : 1) to use molecular methods for pest and disease characterisation; 2) to develop a package of climate-smart agriculture technologies for agriculture; 3) to develop the competences for innovative transformation of raw materials from the agricultural sectors into high-value products; 4) to increase the marketed supply of quality and wholesome milk from smallholder dairy farmers for the local market and as input for the local agroindustry; and 5) to empower the human capital in Rodrigues through agricultural education for improved resilience to climate change.

Background

Climate smart agriculture is among the priority adaptation actions of the country's Nationally Determined Contributions. Mauritius - as a small island state - ranks among the 10 most vulnerable countries to climate change. High precipitation and temperature rise represent considerable challenges to the agricultural sector. Consequently, there is an urgent need to build climate resilience in that sector as a means to increase food security, and research has a pivotal role to play in that demarche.



The action supports the vision 'to promote the University of Mauritius as a research-engaged and entrepreneurial University'. Investment in research and training for innovative sustainable agribusinesses is key to achieving improved food security. The Faculty of Agriculture identified five areas of intervention (see the objective) for this action which will support innovative research to promote sustainable agriculture amidst changing climate. The identified areas are aligned with government policy spelt out in the '*Strategic Plan 2016-2020 for the Food crop, Livestock and Forestry Sectors*' of the Ministry of Agro-Industry and Food Security to promote sustainable agriculture, improve food security and contribute to poverty alleviation.

The University of Mauritius is already implementing a project under the *Global Climate Change Alliance Plus programme* working on onions and garlic production. The involvement and impact that it has on the beneficiaries is noteworthy. The University therefore already has an experience in the domain and the project will allow for additionality.

The theory of change to achieve the objectives

The project will result in better equipped research facilities at the Faculty of Agriculture of the University of Mauritius, and innovative technologies for climate smart agriculture. The project will support five areas of intervention:

- 1) Biotechnology for Pest and Disease Detection and Characterisation: previous analysis and also the COVID-19 pandemic have highlighted the importance of becoming more self-sufficient in foods and reduce reliance on imports. In this regard the objective of using molecular methods for pest

and disease characterisation becomes pertinent as it will have a direct incidence on local food production capacities through improved resilience against pests and diseases.

- 2) Advancement of Climate Smart Agricultural Technologies: the project will explore how to improve the efficiency in food cultivation. This is particularly important for an island state like Mauritius where space is limited. Exploration of vertical farming potentials and aquaponics systems for instance will be useful. In addition, in view of irregular precipitation patterns caused by climate change, it is essential to explore more efficient techniques including irrigation and new crops such as leguminous crops. For this purpose, an existing organic plot will be refurbished for research work. Development and adoption of small agriculture techniques will require technical assistance to farmers for instance to design aquaponics units.
- 3) Enhancing Food Safety, Security and Food Innovation: the project will upgrade the Food Technology laboratory of the Faculty of Agriculture for improving the teaching and research environment, training of current and potential food operators in food safety and food innovation, educating consumers/stakeholders on food waste reduction and developing innovative food products for validation by the forthcoming agro-processing incubator of the AgriTECH Park and commercialisation by food enterprises.
- 4) Development of a sustainable and inclusive value-chain for smallholder dairy farmers: as food security is improved, this is expected to reduce dependency on imports. Increase production of wholesome milk from smallholder dairy farmers for the local market and as input for the local agroindustry is a key focus of the project. Support to the dairy sector will consist essentially of technical assistance on the improvement of feeds for increased milk yield, morphological and phenotypic analysis of local cattle breeds and analysis of pathogens from local milk and evaluation of drugs against cultured pathogens.
- 5) Curriculum development and implementation of a Top up Undergraduate degree programme in Agricultural Science and Technology for Rodrigues: the project also targets the empowerment of human capital in Rodrigues through agricultural education for improved resilience to climate change. This will also be key to the sustainability of the actions.

The project is both timely and relevant as it will complement the AgriTECH park project that the University is also simultaneously implementing consisting of putting in place an incubator to test innovative ideas and promoting entrepreneurial activities. In this case, there will not be any gap between research and its application. The final beneficiaries remain the small farmers and the small planters who, as entrepreneurs, will benefit from both the results of the research and the possibility to put them into application in the incubators. Results of the research will be shared with the planters and farmers community for maximum outreach. Capacity building of extension officers and NGOs who are striving to improve the livelihoods of the farming community in Mauritius will have multiplier effects as they pass on the results of research to their target audience as part of their knowledge dissemination activities. Moreover, publications generated from the project, presentation of findings at conferences and a dedicated website for the project are important mechanisms to capture relevant results of research which will have multiplier effects.

Main activities

The activities of the project consist of

- ✓ Acquisition of equipment is foreseen to (a) upgrade the research facilities in biotechnology for molecular pest and disease diagnosis, for identification of pest and pathogens; (b) create conceptual models through sensors; (c) set up small scale aquaponics systems; (d) refurbishment of existing organic plot for research work; and (e) purchase laboratory equipment required for

teaching, research and developing and processing, quality control and preservation of food products.

- ✓ Training of students on molecular techniques to diagnose pests and diseases.

Experiments and provision of expertise to producers to: (a) develop CSA technologies for selected leguminous crops under organic, sheltered and conventional farming systems; (b) develop efficient water use technologies for small-scale farmers, by testing different irrigation regimes and methods for sustainable agricultural water management. It is known that research is of no use if not made available to end-users. This is why a key focus of the project is on dissemination of research findings to relevant stakeholders through

- ✓ The creation of an e-agriculture platform within the scope of this project and the use of Web2.0 tools will enhance the visibility and contribute to dissemination of the action.
- ✓ Social media will be an essential tool to share information generated from the action.
- ✓ Training workshops, inherent in the project design to achieve project outcomes, will target stakeholders.
- ✓ Media (TV, newspaper and radio) coverage of these activities will contribute to project dissemination.
- ✓ Pamphlets produced as part of some of the activities will be an effective way to disseminate information to stakeholders and target audience

Organization

The project is implemented by the University of Mauritius. A team leader is responsible for the implementation of the project activities. Academics from the Faculty are involved as per the area of competence. A project steering committee has been set up at the level of the Faculty of Agriculture to monitor implementation and progress of the project.

The project was officially launched on 04 March 2020 by the Vice-Prime Minister and Minister of Education, Tertiary Education, Science and Technology, in presence of the Vice Chancellor, Pro- Vice Chancellor, the EU Ambassador and other dignitaries. The event benefitted from considerable press coverage.

Implementing organization

University of Mauritius as main applicant.



Other stakeholders

the Commission for Agriculture of the Rodrigues Regional Assembly, young farmers organisations, small holder farmers

Region

Republic of Mauritius

Funding and co-funding

EU	€ 5,000,000
Faculty of Agriculture	€ 81,000
Total budget	€ 5,081,000

Duration

36 months (2020-2022)