

Building effective partnerships for the mitigation of saline-sodic irrigation to improve crop production and farmers' livelihoods in the Seychelles

This Best Practice was submitted by Mr Barry Nourice, Mr Michael Kiza and Ms Lee Heng as part of the Best Practices Cycle 2016

Description

The success of the project and the usability of the findings are attributed to the collective effort of the project team and partners. This collaboration offers hope that, by working together, partner organizations can successfully address a national problem for the benefit of the farming community.

The project had three elements:

Strengthened ability to identify the presence and severity of the problem: Analytical means have proven that irrigation water on the coastal zone is the source of salinity; this was also verified using oxygen-18 isotopic technique. The project allowed the management of more than 400 tests per month, which provides clear solutions to the problem. Through the use of the isotope of nitrogen (N-15), the most efficient use of fertilizer N is being determined under normal and saline soil to improve fertilizer recommendations to farmers.

Development and provision of an appropriate solution: One of the results demonstrated that the use of gypsum to minimise the impact of salinity is well known amongst farmers and their extension officers, due to the experimental work done in the field and the training provided by project partners. A large stock of gypsum was procured to supply local farmers, resulting in better production for the market. A study on N-15 isotopic technique allowed the better management of fertilizer under saline conditions, and a study on O-18 showed that seawater intrusion needs to be managed.

Sensitization: The media has been a key partner in the dissemination of project achievements. A set of leaflets is being produced on the cause of salinity and possible solutions. A colour-coded card, showing the interpretation of electrical conductivity (EC) value in mS/cm and the mitigation measures required addressing the impact of sodium and increasing EC has been developed, in partnership with the United Nations Development Programme/Global Environment Facility - Small Grant Programme (UNDP/GEF-SGP), and is currently being used by farmers.

Categories:

6. Partnership

Subcategories:

- a) Strategic
- b) Technical
- c) Financial

Problem/issue

Much agricultural land in the Seychelles is either acidic, ferralitic soil or alkaline sandy soils (Shioya Series), which are deficient in the macro and micronutrients, essential for optimal plant growth and development. The abundance of sodium ions caused more than 80% of the annual loss in leafy vegetables over the past 10 years. Furthermore, the Government did not have the laboratory equipment nor the trained personnel required to perform analyses to establish the correct amount of fertilizers needed to alleviate nutrient deficiencies and ensure good plant growth.

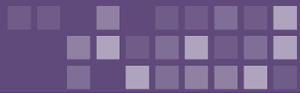
How & who

An IAEA technical cooperation (TC) project was launched in January 2014, with the Seychelles Agricultural Agency as the counterpart. Within the United Nations System, this project is a pilot for the 'Delivering as One' initiative. The IAEA is partnering with the UNDP/GEF-SGP and FAO to produce a common outcome. The UNDP/GEF-SGP provides a link between the IAEA projects and the farmers who are direct beneficiaries of the combined projects; supporting the mobilization of Baie Ste Anne Farmers Association and other civil society organizations for workshops/trainings provided by the IAEA and the International Center for Biosaline Agriculture (ICBA). This association is the driving force behind the implementation of salinity management on Praslin Island, and the non-governmental organization (NGO) can now be used for the sensitisation programme on the island. A farmer and member of this NGO was sent on a scientific visit to ICBA to understand how the issue of salinity can severely affect crop production and what may be the best approach for its management. GEF/SGP also installed two soil moisture and salinity monitoring systems in Praslin to manage the salinity and sodicity problem. The GEF/SGP activities are implemented under the Australian Agency for International Development (Department of Foreign Affairs and Trade) funded community based adaptation project to increase the resilience of farmers by addressing soil salinity.

The ICBA is providing technical support for the assessment of salinity and sodicity, soil and water monitoring activities, data analysis and interpretation, and human resource capacity building of researchers, as well as providing genetic materials that are tolerant to saline soils.

In 2017, the work carried out through SEY5007 received further assistance under the project FAO/TCP/SEY/3503. The project assisted the ongoing project, SEY5007, via the soil laboratory with a further donation of laboratory equipment and field equipment to sustain the ongoing laboratory work. The above became possible only because of the vast collaboration established by the project SEY5007, rendering the project visible to other potential partners. The FAO, through the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, is also providing technical support to this project.

The counterpart was sponsored to undertake an MSc in Soil Science at the University of Aberdeen, UK. During this course, the counterpart managed to establish links with professors and lecturers with vast knowledge in the domain of soil science and plants. The University also offered a partial PhD scholarship to the counterpart and provided access to unlimited sources of literature on the subject matter.



The Constance Ephia Resort supports the procurement of additional soil moisture and salinity monitoring systems to be installed within their premises and the neighbouring areas to benefit the local farmers at Port Glaud.

Local farmers affected by salinity participated in the project, providing on-farm experimental sites where two experiments were held.

Approach

In the Seychelles, salinity was monitored for five years and a pattern of increased salinity was observed. This created an understanding of the sensitive nature of the area under cultivation and how salinity impacts the livelihood of the farmers and the public at large.

How effective

The project has provided opportunities for the local farming community, by training local staff on the management of salinity under local conditions and providing a local solution to the problem. This was possible due to the new formed partnership with ICBA. Linking the project to the University of Aberdeen allowed for the achievement of an MSc and soon a PhD which contributed to the success of the project.

Lessons learned

Implementation of any project in a small island cannot be carried out in isolation. Partnerships help to make the project more visible, touching a wide community including the local and international community both regional and global. The development of a memorandum of understanding (MOU) with the UNDP-GEF-Ecosystem Bases Adaptation Project, to facilitate the development of research collaboration, also contributed to the continuity and sustainability of the project. This collaboration has facilitated the procurement of equipment as well as supported local training in salinity management.

Through this project, the causes of brackish water and its effects on soils, crops and soil/crop interaction are being scientifically established, and solutions will be provided to mitigate or adapt to current and future problems. The project has established that the high salinity of the water source is not saline but rather saline-sodic. With this result, it is now possible to implement appropriate short and medium-term mitigation measures.

Key success factors

The key success factor is the leadership of the project. The project counterpart needs to be engaged with the implementation of the project on a daily basis, as a lead scientist with knowledge of the project subject and with sufficient experience with the IAEA system. In the case of Seychelles the most successful factor was the counterpart for the project SEY5007, who through their efforts managed to remain consistent in the implementation and realisation of the various partnerships. This is a result of continuous support from the National Liaison Officer, and the IAEA team.

Beneficiaries

The project has built a local capacity of experts and institutional knowledge within the Seychelles Agricultural Agency. The direct involvement of farmers and farming community in the conception and implementation phase of the SEY5007 project, were endorsed by other community based projects like the UNDP-GEF-SGP and UNDP-GEF-EBA. This led to their unequivocal support of the SEY5007 project. This approach of involving the community and understanding the modality of other projects in a country helps the development of partnerships, especially within the frame of training and using local government bilateral agreements. This is a good option to ensure the successful implementation of a national project and to give the project greater visibility.

Quality criteria

Relevance, Ownership, Sustainability, Efficiency, Effectiveness

Special conditions

The efficiency of this project was due to the constant contact between the project counterpart and other partners, as established by the MOU. All the partners were committed to the project, which is vital for long term sustainability. After the project closes, these partners will remain strategic partners for the local institution.

TC project: SEY5007 “Increasing Crop Production through Effective Management of Soil Salinity in the Coastal Area using Nuclear and Related Techniques”