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FOREWORD

Message from Patrice Talla,

FAO Sub-regional Coordinator for Southern Africa.



Dear reader,

It is my pleasure to welcome you to the second edition of the Support Towards the Operationalization of the Southern African Development Community (SADC) Regional Agricultural Policy (STOSAR) project bulletin.

Through the STOSAR Project, the Food and Agriculture Organization of the United Nations (FAO) continues to be at the forefront of tackling hunger and food insecurity in the Southern African Region, by facilitating the development and domestication of pests and diseases management strategies to promote sustainable agricultural and socioeconomic growth across the sixteen SADC Member States.

This last quarter, the STOSAR Project has seen the official launch of the SADC Agricultural Information Management System (AIMS), which will ensure that policymakers access valid data, critical to the development of sound, evidence-based, and need-driven policies. Accurate and reliable data helps us to focus on relevant problems and enables the allocation of constrained resources to where they are most needed.

The exchange of knowledge, information and data not only supports FAO's work for a world free of hunger, malnutrition and poverty but also contributes to the achievement of the United Nations Sustainable Development Goals (SDGs).

The theme of this quarter's bulletin focuses on STOSAR's collaborative and strategic partnership with six regional Centres of Excellence. In this edition, you will read how some SADC countries such as Zambia, are now exporting horticultural commodities that include blueberries, soya beans and stevia (a natural sweetener and sugar substitute derived from the leaves of the plant species stevia rebaudiana).

Member States also remain on high alert monitoring the incursion and spread of transboundary animal diseases through surveillance activities for foot-and-mouth disease, peste des petits Ruminants and Highly Pathogenic Avian Influenza. The STOSAR Project has developed tools, and supported and coordinated actions to build, sustain and improve regional and national pests and diseases preparedness and response capabilities.

The human-interest stories documented in this publication are the collective contributions of various SADC Member States. The best practices make it apparent to our readers the high-level results we have achieved to facilitate the trade of animal and plant products and enhance food and nutrition security within the SADC region.

I hope you find this edition enlightening and informative.

Message from the ambassador of the European Union (EU) to the Republic of Botswana and the Southern African Development Community (SADC), Her Excellency Petra Pereyra.

EU Support towards Operationalization of the SADC Regional Agricultural Policy.



Dear Readers,

The European Union (EU) is providing support towards the implementation of the Regional Agricultural Policy (RAP) in the Southern African Development Community (SADC) region targeting three priority areas: agricultural information management systems for data-driven decision-making; tackling transboundary animal diseases and crop pests with implications on trade, and food and nutrition security.

Globally, the performance of the agriculture sector has a direct influence on food security and poverty reduction. In the SADC region, agriculture is central to

the development agenda mainly because it is the leading economic sector in most SADC countries, contributing 17 percent of the region's GDP and about 13 percent of total export earnings.

Agriculture is also a source of raw materials, particularly for agro-processing, and thus is a major element of the region's industrialisation strategy. About 61 percent of the region's population of over 300 million people live in rural areas, with a vast majority of the population deriving their livelihoods from agriculture. However, food security continues to be a challenge for many, due to a decline in food production in several parts of the region, exacerbated by emerging transboundary pests and diseases and extreme climatic events such as floods and droughts resulting in poor harvests.

Households in parts of the region are likely to continue requiring humanitarian assistance to reduce food gaps, protect their basic livelihoods and build resilience. Emergency efforts may become necessary in Madagascar, for example, following severe drought and poor harvests.

The COVID-19 pandemic has contributed to the weakening of agrifood systems and widened inequalities in our societies, driving further food shortages and resulting in hunger and food insecurity. The ongoing conflict between Ukraine and the Russian Federation also continues to disrupt global food supply chains, further affecting the price of important food commodities.

As the STOSAR Project continues its implementation of the RAP, it has adopted innovative approaches to the risk management of trade-related diseases in accordance with international guidelines and standards. The SADC Member States have achieved important progress to guard against the entry and the establishment of emerging plant pests and animal diseases achieved through the development and rollout of regional disease and pest management strategies with the expertise of six Centres of Excellence. With continued support from the European Union, STOSAR has improved the agricultural databases across the SADC Member States that are now linked to the regional database to form the SADC Agricultural Information Management System (AIMS). The recent launch of the SADC AIMS platform is a much welcome development. I believe it will provide a consistent, standardized and reliable data reporting and analysis system that will be easily accessible to stakeholders and policymakers to make strategic decisions that positively improve access to export markets and unlock trade opportunities for SADC Member States.

Looking forward we would like to safeguard the gains made in the context of our support towards bringing the SADC regional agricultural policy to life; and other interventions in the agricultural sector.

Under the new financing framework of the European Union, spanning the period 2021 to 2027, one of the priorities for the EU's partnership with SADC will be to support a Green and Just Transition. We recognise that actions related to this transition will require systemic and sustainable change in the areas of climate mitigation and resilience; energy; agrifood systems; sustainable consumption and production; biodiversity conservation and sustainable management of natural resources and ecosystems; environmental governance; sustainable raw materials value chains; sustainable water and land management; ocean governance; and the blue economy. These sectors are able to generate transformation towards low emissions, resilient and inclusive growth paths and a circular economy.

The European Union support, across the different areas of the regional programme, needs to work for all people, protecting rights, leaving no one behind and contributing to reducing inequalities. The European Union support has also a strong gender dimension that will be fully integrated at both strategic and operational levels. The focus will be placed also on the Youth, not only as beneficiaries but also as key change actors.

Shocks affecting the agrifood sector are likely to become more frequent due to climate change, land degradation and biodiversity loss. This scenario exacerbates the fragility of economies and societies. Countries will likely continue to be confronted with increasing tensions between current agricultural development strategies, forest conservation and restoration policies. Similar tensions are likely to occur between aquaculture/fisheries development strategies and unsustainable practices, increased competition among sea uses and weak ocean governance. At the same time, agriculture, fisheries and aquaculture offer a number of entry points for climate adaptation.

Our future cooperation towards sustainable agrifood systems will contribute to agricultural research and innovation, supporting the agroecological transition for climate-resilient food production. Farmers' organizations will become more prominent actors in promoting the agro-ecological transition and inclusive nutrition-sensitive value chains. African regions will improve their capabilities to address recurring and new plant pests and animal diseases.

Through this future step in our Partnership with the SADC and the Food and Agricultural Organization of the United Nations (FAO), the European Union will contribute to developing a more sustainable agrifood system, inclusive of aquatic food systems, in line with the external dimension of the Farm to Fork Strategy and the future European Union-Africa Ocean Agenda that recognises the close links between healthy people, healthy societies and a healthy planet.

I hope you enjoy reading this edition of the STOSAR bulletin.

Brief project overview by Elma Zanamwe,

STOSAR Project Coordinator.



The Support Towards the Operationalization of the SADC Regional Agricultural Policy (STOSAR) Project continues to channel its efforts towards positioning the SADC Member States to increase their agricultural productivity by tackling transboundary pests and diseases in order to access regional and international export markets.

I would like to express my appreciation to the European Union, for providing additional funding support for STOSAR activities for another year, until August 2023. This gesture will ensure the completion of project activities whose progress was held back mainly due to the COVID-19 restrictions.

The STOSAR Project, with the support of the SADC Secretariat, celebrated the launch of the SADC Agricultural Information Management System (AIMS) in Gaborone, Botswana on 21 September 2022. The impact of this intervention is far-reaching with the next steps of the AIMS being to establish an early warning mechanism linked to SADC countries so that the functionality of the system is enhanced to play a more critical role in the region's early anticipatory actions.

During this last quarter, the Project has developed a public-facing website for the AIMS platform that will provide access to information on the achievements realized under the STOSAR project components of AIMS, Animal Health and Plant Health. This includes recent events, meetings/ trainings, as well as access to a repository with project products and other useful resources.

Under the animal and plant health components, major strides continue being made to improve the capacities of SADC countries to better manage key transboundary pests and diseases that threaten the growth and sustainability of the region's crop and livestock sectors.

The theme of this second edition of the Bulletin focuses on STOSAR's collaborative and strategic partnership with six regional Centres of Excellence (CoE) that include the French agricultural research and international cooperation organization (CIRAD), the Universities of Pretoria and Stellenbosch in South Africa, the Agricultural Research Council of South Africa, the Centre for Agriculture and Bioscience International (CABI), and Eduardo Mondlane University in Mozambique. Through a range of capacity development activities and services, the CoE provided technical expertise tailored to the needs of SADC Member States.

Equipped with increased preparedness and response capacities, harmonized regional strategies, guidelines, and tools; an improved understanding of sanitary and phytosanitary issues, implementation of measures to effectively manage transboundary pests and diseases impacting trade, buttressed with strong regional coordination and collaboration networks, SADC Member States have seen improved access to markets for their animal and plant products.

This bulletin also contains best practice stories to illustrate the successes of these strategic partnerships that have endowed SADC countries with the skills to co-create homegrown solutions to increase agricultural productivity, competitiveness and trade.

I hope you enjoy reading this edition.

ACKNOWLEDGEMENTS

This second edition of the STOSAR Bulletin has been made possible through the contributions of all key project stakeholders and partners. This process was led and coordinated by the FAO STOSAR Project Coordinator, Elma Zanamwe, and the Communications Specialist, Sibusisiwe Ndlovu. Key contributions were received from the STOSAR Project team - Aboubacar Daman (STOSAR Information Systems Specialist); Zibusiso Sibanda (Plant Health Specialist); Fadi Mujahid (STOSAR Systems Developer); and Enrique Antón (Creative and Graphic Designer). Overall technical guidance for the publication has been provided by Mathew Abang (Plant Production and Protection Officer, FAOSFS), Berhanu Bedane (Animal Production Health Officer, FAOSFS), and Stuart Tippins (Information Technology Officer, FAOSFE).

Also acknowledged are the contributions of SADC colleagues, Domingos Gove (SADC Director, FANR), Duncan Samikwa (Senior Programme Officer), Esaiah Tjelele (Programme Officer, Crops), Gaolathe Thobokwe (Programme Officer, Livestock); and the donor for the project, the European Union, H.E Ambassador Petra Pereyra and Tebogo Matlhare (Programme Officer).

The STOSAR Project also acknowledges the articles and photographs submitted by the project's six Centres of Excellence. Namely, the articles received from the French agricultural research and international cooperation organization (CIRAD), the Universities of Pretoria and Stellenbosch in South Africa, the Agricultural Research Council of South Africa, the Centre for Agriculture and Bioscience International (CABI), and Eduardo Mondlane University in Mozambique. We also acknowledge the articles and images received from some FAO colleagues and STOSAR focal persons from the Member States. They are Edward Mushota (Zambia Ministry of Agriculture AIMS focal point), Tobias Phillipus (FAO Namibia), Prithiviraj Dookhitram (STOSAR Consultant Mauritius), Steven Lazaro (FAO South Africa), Emma Mazimba (Plant Quarantine and Phytosanitary Services in Zambia), Kevin Mazorodze (FAO SFS), Boitumelo Mokiya (FAO Botswana) and Zuba Mwanza (FAO Zambia). The team also acknowledges images used in this publication from Namibia Meat Corporation.

Agricultural Information Management System (AIMS) component

Tremendous progress has been made under the Agricultural Information Management System (AIMS) component of the STOSAR project with the SADC AIMS platform being officially launched in Gaborone on 21 September 2022. In addition to providing the tools necessary for policy formulation, implementation, and monitoring, the AIMS platform will address the challenges of fragmented and unreliable data in the region.

The STOSAR team has been populating the regional database over the past few months with real agricultural data that will provide the SADC Member States with the perfect instrument to monitor progress made against the SADC Regional Indicative Strategic Development Plan (RISDP) 2020-2030. These activities are being implemented by using best practices adopted during the implementation of the project.



AIMS Agricultural Information Management System



Cassmord

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ARTICLE

FAO and SADC launch regional Agricultural Information Management System (AIMS)

Unreliable and unharmonized data in the agricultural sector in Southern Africa has always been a setback for policymakers, resulting in considerable delays in planning processes for implementation of well-coordinated regional responses to curb threats that include transboundary pests and diseases such as the Fall Armyworm and foot-and-mouth disease that negatively impact productivity and trade in the region.

To mitigate this, the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Southern African Development Community (SADC) launched the inaugural SADC Agricultural Information Management System (AIMS), a platform to generate agricultural data for evidence-based decision-making for the region. The AIMS platform was developed through the project 'Support Towards Operationalization of the SADC Regional Agricultural Policy' (STOSAR) funded by the European Union (EU).

"The SADC AIMS is an integrated and multilingual system providing policymakers with access to reliable and timely data on which to base policies, resource allocations, and emergency interventions. This web-based application will provide SADC Member States with standardized instruments necessary to produce and disseminate comparable statistical information to inform SADC policies," said Patrice Talla, FAO Subregional coordinator for Southern Africa.

The SADC AIMS platform is a web-based application with 12 modules for collecting, storing and analyzing agricultural information. This system is supported by a high-end server that was installed at the SADC Headquarters data centre in February 2022. Thirty-two (32) computers were also procured for the 16 SADC countries to ensure they had the infrastructure for setting up a functional AIMS system at national level.



SADC AIMS platform.

"The regional approach adopted by this project helps to standardize procedures for information management and sharing, communication on food security, and to rationalize decision-making on the management of food production. This should be a good indicator of prospects for deeper regional integration, with the ultimate goal of increasing access to export markets and trade opportunities," said Tebogo Matlhare, European Union Programme Officer.

The SADC AIMS platform will positively impact the agricultural sector in the region through its capability to accurately measure the performance of the sector to support and influence timely strategic interventions such as early warning systems for early anticipatory action. The AIMS platform also provides the information needed for tracking progress made towards the attainment of the food and nutrition security goals and commitments stipulated in key development policies such as the Regional Indicative Strategic Development Plan (RISDP) 2020-2030, the Comprehensive Africa Agriculture Development Programme (CAADP), and the United Nations Sustainable Development Goals (SDGs).

"Sound agricultural policies that are data-driven are the backbone of a thriving agricultural sector. They are strategic to SADC's development, unlocking economic growth, increasing incomes, improving living standards, eradicating poverty, and enhancing food security for all Member States," said Domingos Gove, the SADC Food Agriculture and Natural Resources (FANR) Director.

"To ensure that we continue to be at the forefront of ending hunger, the FAO continuously applies modern scientific knowledge, technology and data analysis to develop innovative, data-driven policies, which are well targeted and produce the desired results," added Talla in his remarks at the launch.

Through the AIMS component of the STOSAR Project, all 16 SADC Member States have had their capacities developed in data harmonization, AIMS principles and operations so that they can regularly feed data into the system. For purposes of coordination and governance at national and regional levels, AIMS Technical Committees have been established.

The SADC AIMS platform is accessible through a public-facing landing webpage hosted on the SADC website domain.



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SADC AIMS best practices

Best practice 1. Data harmonization

Currently, all SADC countries generate agricultural information, however, it is mostly fragmented and stored across different systems, and some of it is in different formats – paper-based or digital. When data is fragmented it delays the decision-making process since it takes tremendous time and effort to locate and consolidate the relevant information. Even if all the necessary data is collected, you may still experience problems with the quality of collected data. This is because of the different ways data is organized within the SADC countries and in some cases may even use different naming conventions to report on the same information. This can result in misinterpretation of information, and it can also result in the same information being duplicated and reported several times.

To address this challenge, the AIMS team developed a harmonized data collection questionnaire. One of the most important benefits of harmonizing your data is to obtain a single source of data. This helps reduce the time spent on verification and tracking of different data sources which translates to an efficient data collection and submission approach.

The benefits of having a common and harmonized approach to collecting data in SADC countries are:

- 1. Removal of data redundancies and duplication
- 2. Improvement of data quality which results in fewer errors
- 3. Streamlining the process of information generation and submission

To successfully implement data harmonization practices within the Member States, a proper understanding of the objectives of AIMS was required. Once this was clear, the following process was followed:



After these three major steps are completed, additional steps are needed to identify the different variables for harmonization, this can be challenging because data from different sources

at the national level can be reported in a different format. So, it is important to find a proper balance. Finally, the data is converted into a common format that is tailored and accessible to all Member States.

The value that data harmonization adds to an organization is very easy to see, especially with the speed gained during data collection. However, the implementation roadmap can be challenging. Data Harmonization helps bring the different elements and variables and combines them into a single location which can contribute to making information quickly available for faster decision-making.

Best practice 2: Data entry

The recently developed and implemented Agricultural Information Management System (AIMS) seeks to support SADC Member States in data gathering, storage, processing, and analysis. The system itself is an integrated web-based application and has an Application Programming Interface (API) to ensure interoperability with other systems within the SADC region or externally. The AIMS infrastructure is designed to enable each Member State to share agricultural information in a standardized format, and to ensure that up-to-date information is readily available for reporting and evidence-based decision-making. Member States share information by using a harmonized data entry questionnaire (Figure 1) or by directly using the built-in data entry module (Figure 2).

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SADC Member States have been allocated data entry questionnaires which are compatible with the AIMS web application. The questionnaires have meta-data that are aligned with agricultural indicators that provide monitoring functionality against the Regional Indicative Strategic Development Plan (RISDP).

These two options are the only recommended approaches to ensuring that the information submitted to the AIMS is always up to date, which will facilitate quality, real-time reporting. This means that decision-making by the Member States will be based on the latest information retrieved from the regional database.

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inal Products		Assaida												
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	Production (Tore)			134.5	173	188	12	230	78	64	255	885	213	197
Chacken eggs	Food Consumption (Tons)		149	219	279	270	294	264	193	79	175	218	238	127
	Production (Tons)		53	101	173	200	244	72	208	- 84	223	149	60	127
Cow milk	Food Consumption (Tons)		108		154	83	101	218	252	245	248	118	204	100
	Production (Tone)		81	509	164	162	167	179	183	129	251	279	208	289
Duck meat	Food Exesumption (Tiona)		241	101	255	10	244	214	299	317	125	100	192	- 291
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Mides :	Food Consumption (Tena)		111	202	191	12	87	194	200	238	115	91	208	228
	Production (Tono)		113	379	18	217	149	79	104	77	214	253	176	144
Mohair	Panel Consumption (Tons)		523		5.87	219	216	269	224	28	- 71	05	88	1.26
	Production (Tono)		227	\$75	204	259	203	228	246	87	85	85	240	163

Best practice 3: Database design

The SADC AIMS is a web-based application that was developed to store data related to 12 different thematic areas namely Crops, Livestock, Aquaculture, Forestry, Agricultural Input, Animal/Plant Health, Socioeconomics, Land Cover, Public Finances, Trade Quantity, and Production Value. The data collected under each of these areas are stored on the regional database that is part of the AIMS platform. Before deciding on the different data points that are part of the overall system, it was critical to understand what data was available, what kind of reports were to be generated, what indicators were being monitored and how they were aligned with the Regional Indicative Strategic Development Plan (RISDP). This helped identify variables that would be most informative, thus setting the framework for the harmonized data collection questionnaire.

By gaining a good understanding of the data needed, the process of formulating the business requirements to develop the capabilities of the system was simplified through the design of the logical model of the business requirements and benefits. The logical model focused on all the tasks the database would perform. It was critical to have a clear understanding of how the AIMS platform was going to operate, the type of data that it would generate, and the rules that would govern the validity of data. This analysis produced an Entity Relationship Diagram (ERD) that described all the data that is collected, and how they relate to each other.



Having a fully detailed Entity Relations Diagram for developing any system, not only AIMS, is a best practice recommendation for building dynamic web applications. Once the ERD is completed, you can begin constructing your database which will form part of the overall web-based application.

Resources

• AIMS Harmonized Data Entry Tool

ARTICLE

SADC AIMS facilitates establishment of effective agricultural data collection mechanisms in Zambia

At national level, Zambia has implemented a web-based Agricultural Management Information System (ZIAMIS) to support the management of various agriculture programs in the country. The system itself was developed as an integrated platform that hosts a universal harmonized national database of farmers and provides a mechanism to track, monitor and enforce operational controls to improve oversight. It also facilitates mass SMS communication to farmers and other stakeholders, along with market, nutrition and food security monitoring across the country. With the recent launch of SADC AIMS, funding has been granted to further extend the existing functionalities of the ZIAMIS by integrating AIMS into it.

This synergy with the AIMS component of the STOSAR project will further improve the standardization, collection, analysis, and sharing of official statistical data in Zambia and strengthen the capacities of officials from the Ministry of Agriculture, and Ministry of Finance on the use of international standards to disseminate data.

"The AIMS journey in Zambia started with two capacity-building workshops organized by the FAO and SADC to prepare the AIMS National team to roll out activities in Zambia," said Edward Mushota, the Zambia Ministry of Agriculture AIMS focal point person.

He explained that "the first workshop was a regional indicator validation workshop held in February 2020, in Johannesburg, South Africa to build the capacity of National AIMS officers. This was followed by a second regional workshop for the Training of Trainers (ToT). At this workshop, participants from SADC countries acquired skills to collect, process and export data in a standardized format."

Before rolling out the AIMS activities under STOSAR a national situation analysis was conducted. The major output of this exercise was a comprehensive document that outlined coordination mechanisms and identified potential gaps that needed to be addressed by government departments and agencies working on agriculture information in Zambia. The assessment showed that no databases had been put in place to monitor agricultural and livestock production for the past 10 years and that rural districts did not have organizations that could store data for future reference. It was also noted that some data required specialized surveys, for instance, the data from crops like wheat, vegetables, and fruits.

The document also identified critical stakeholders with a major role in gathering and disseminating agricultural data including the ministry of agriculture, ministry of fisheries and livestock, Smart Zambia Institute, FAO, SADC and other government and private institutions.



The Zambia AIMS focal point person using a STOSAR procured computer during a UAT exercise. "The regional trainings were followed by provincial trainings conducted in all 10 provinces in Zambia, with the main objective being to provide and promote a common understanding of AIMS indicators on agriculture, forestry, fishery, and food security among other indicators," added Edward.

After the training a data collection exercise began, using the standard questionnaire designed by FAO, data was collected in all 10 provinces of the country. The final product from the data collected was provided as input into the SADC AIMS.

The STOSAR project has also procured computers that were handed over to the ministry of agriculture and the Zambia Statistics Agency. The computers are being used as a repository and aggregation point for the data collected in the country on the agreed SADC minimum core indicators on agriculture.

Enhancing the functionalities of ZIAMIS through the STOSAR project will further enhance the use of ICT within Zambia's Ministry of Agriculture, as it collects and manages databases such as the National Farmer Register and the national catalogue of agricultural inputs.

Article contribution

Edward Mushota, Zambia Ministry of Agriculture, AIMS Focal Point.

Animal health component

In addition to its role of providing high-quality protein and bioavailable minerals and vitamins, the livestock sector contributes significantly to the agricultural Gross Domestic Product (GDP) of many Southern African countries. For example, the livestock contribution to agricultural GDP reaches 80 percent in Botswana, 70 percent in Namibia and 42 percent in Zambia. In a continent mostly importing animal source food, some countries in Southern Africa export beef to high-value markets in Europe, America and Asia. The multi-function role of the sub-sector, such as the provision of milk, eggs, manure and draft power for crop production and serving as a hedge during drought and other emergencies, make livestock the pillar of livelihoods.

In collaboration with two CoE, CIRAD and the University of Pretoria, STOSAR has made remarkable progress in strengthening the capacities of SADC countries to better manage the spread of key transboundary animal diseases which has resulted in limiting spread, protecting livelihoods, and maintaining continued access to the lucrative export markets for meat, whilst continuing to unlock the full potential of the livestock sector.

Collecting oropharyngeal swabs during avian influenza surveillance activities.

CIRAD. Centre of excellence



Enhanced risk-based surveillance protocols for targeted animal diseases

The French Agricultural Research Centre for International Development (CIRAD) works with its partners to build knowledge and solutions and invent resilient farming systems for a more sustainable, inclusive world. It mobilizes science, innovation and training to achieve the United Nations Sustainable Development Goals (SDGs). Its expertise supports the entire range of stakeholders, from producers to public policymakers, to foster biodiversity protection, agroecological transitions, food system sustainability, health (of plants, animals and ecosystems), sustainable development of rural territories, and their resilience to climate change.



CIRAD has a highly specialized research unit – better known as ASTRE (Animals, Health, Territories, Risks and Ecosystem) that provides solutions to health constraints linked to the production of both domestic and wild animals, and the interface between humans, animals and the environment. CIRAD has been working in the SADC region extensively in collaboration with

Laboratory training by CIRAD.

various partners for a long period with a particular focus on animal disease surveillance. ASTRE is an international and national reference laboratory for multiple diseases, for the European Union (EU) and World Organization for Animal Health (WOAH) reference laboratory and FAO Centre of Excellence for Peste des petits ruminants (PPR) https://eurl-ppr.cirad.fr/.

Within the STOSAR project, CIRAD through ASTRE provided specialized services for risk analysis training, and sample testing for the management of foot-and-mouth disease (FMD) and PPR, with a special focus on PPR, starting January 2020 up until June 2022. It contributed to the surveillance, diagnosis, risk analysis and risk mapping, as well as providing training of experts on the prevention



and control of FMD and PPR and laboratory diagnosis of samples from outbreaks or active surveillance.

Risk analysis and risk mapping for the above-listed two Transboundary Animal Diseases (TADs) contribute to the development or refinement of regional control strategies aligning them to global control or eradication strategies. For this reason, a training action program was implemented to have a better understanding of risk factors implicated in the introduction and dissemination of animal diseases. Selected participants received skills in risk analysis, risk mapping, surveillance and disease control on FMD and PPR. The PPR model was targeted to develop a pedagogical toolkit for animal mobility studies.

A definitive diagnosis of PPR is

demonstrated when combined with clinical observations and epidemiological data. Therefore, laboratory diagnosis was key for efficient surveillance and control of this disease, as its symptoms can easily be confused with those of other diseases circulating in the region, such as bluetongue, Contagious Caprine Pleuro Pneumonia (CCPP), FMD, sheep and goat pox, orf, and bacterial pneumonia. Under the STOSAR Project, over 230 field and laboratory experts from SADC countries were trained by CIRAD on the diagnosis of PPR. The trainings emphasized that definitive diagnosis depends on good sampling techniques and therefore quality control needed to be a key part of the training for laboratory personnel providing diagnostic services to the governments or other national or international institutions.

CIRAD also provided training on Quality Management Systems to facilitate the accreditation of national veterinary diagnostic laboratories in some of the SADC countries.

The main outputs of CIRAD activities included the development of national and regional risk maps and risk-based surveillance protocols for targeted animal diseases, and an increased capacity of SADC-member countries to perform surveillance and laboratory diagnostics for major transboundary animal diseases.

Typically, CIRAD carries out face-to-face capacity-building activities as it is especially important for training in laboratory techniques or favouring exchanges among participants. However, due to COVID-19 travel restrictions, CIRAD had to modify its STOSAR capacity-building activities so they could take place online through its eLearning platform – PRISME, which offers a large selection of online courses on global health.

With the support of the PRISME team, tutors proposed programmes of online courses and webinars to meet the objectives of the STOSAR project. All the material produced remains available to participants for reference and can be used for future CIRAD training activities.

Resources

• CIRAD PRISME eLearning Platform

Article contribution

Dr. Arnaud Bataille

University of Pretoria. Centre of excellence



Capacitating SADC member states on animal disease and food safety risk analysis based on international standards and guidelines

The University of Pretoria (UP) is one of Africa's top universities. Its Faculty of Veterinary Science (FVS) is the only institution in South Africa responsible for training veterinarians and veterinary nurses, dating back as far as the early 1920s. The FVS graduate and research programmes are vital in enhancing human and animal health, promoting biosecurity and welfare, and ensuring production animals, wildlife and pets are in good health. The Department of Veterinary Tropical Diseases (DVTD) is one of the five (5) Departments in the FVS. As an internationally-recognized centre of excellence in collaborative research, teaching and service rendering, with particular emphasis on infectious and parasitic diseases at the human-domestic-wildlife interface in Southern Africa, the FVS participated in the STOSAR project through its DVTD.



DVTD started work on the STOSAR in March 2020. The activities that were implemented are listed below:

- Conducted a situation and gap analyses on non-geographic approaches for reducing trade risk posed by FMD that can be applied in the SADC Region. Identified areas of improvement, developed a prioritized action plan, and compiled a comprehensive report in consultation with SADC Secretariat and FAO;
- Reviewed and disseminated guidelines/best practices on non-geographical approaches including Commodity-based Trade (CBT) to SADC Member States;
- Awareness was raised among policymakers, at least at the Permanent Secretaries level, of Ministries of Agriculture/Livestock, Industry and Trade/Foreign Affairs, of SADC Member States) on the options of non-geographical approaches including CBT for improving market access by reducing the risk of FMD along value chains and modalities of their implementation;
- Generic training on FMD and HPAI included clinical recognition and laboratory diagnosis, lesion ageing (FMD), sampling, epidemiology, outbreak investigation, biosecurity, control measures, and developing SOPs;
- Training on FMD control went hand in hand with CBT (FMD risk management); Conducted training on animal diseases with major emphasis on FMD and HPAI and food safety risk analysis with a focus on SPS Annex VIII to SADC Protocol on Trade to achieve equivalence, focus areas included: i. overview of WTO and the FAO/WHO Codex Alimentarius food safety

standards, ii. application of the key concepts and principles of risk analysis, and iii. mapping value chains to identify disease transmission risks and developed risk-based control options.

The participants gained knowledge and understanding of the non-geographic approaches to FMD risk management including Commodity Based Trade, surveillance, diagnosis, and risk analysis for the implementation of SPS in SADC countries as well as knowledge on prevention and control of FMD and HPAI. Participants were also expected to gain practical laboratory training on techniques used to diagnose FMD and HPAI. However, due to the Covid-19 pandemic and restrictions on travel, participants were unable to travel to the FVS for the laboratory training.

Developing the capacity of MS capacity on animal disease and food safety risk analysis based on international standards and guidelines, and the SPS Annex to the SADC Protocol on Trade to support the potential use of the equivalence provisions under the WTO SPS Measures Agreement is set to improve the compliance of producers and value chain operators in SADC countries to sanitary requirements for international trade.

Resources

- Codex Alimentarius
- ANIPEDIA is an online quality and invaluable scientific animal health knowledge resource providing updated information on Infectious and parasitic diseases, Plant poisonings and mycotoxicosis for veterinary, para veterinary and allied animal and human health professionals and students.
- Guidelines for Commodity-Based Approaches

Article contribution

Prof. Tshepo Matjila

Best practice article Safeguarding Namibia's lucrative livestock sector

Namibia's lucrative livestock sector is an important industry for the country as it remains a major source of income and livelihood within the broader agriculture economy, with the export of live animals (mostly cattle and sheep) historically contributing to about two-thirds of agricultural exports by value.

However, the livestock sector faces a myriad of challenges, particularly with the constant outbreak of animal diseases such as FMD, contagious bovine pleuropneumonia (CBPP) (also known as lung plague), lumpy skin disease, anthrax, and FMD which pose a major threat to Namibia's livestock sector.

An outbreak of diseases such as FMD and CBPP, which mainly occur in the northern parts of the country just above the veterinary cordon fence (VCF) which is commonly referred to as the "Red Line", can negatively impact the country's livestock production, productivity and access to export markets and, thereby, affect and undermine local food security and livelihoods



Namibian beef being packed for lucrative export markets at MeatCO.

Fighting diseases

Ensuring that the country's Directorate of Veterinary Services (DVS) is wellcapacitated to detect and contain outbreaks of such animal diseases is critical to the sector's ability to continue contributing positively to Namibia's economy. This capacity also gives confidence to the country's key trade partners and customers who have been importing beef from the country for years.

As a key development partner in helping the country to safeguard and uplift its agriculture sector, the Food and Agriculture Organization of the United Nations (FAO) has capacitated the division of Diagnostic Services and Research housed within the Department of Veterinary Services' (DVS) Central Veterinary Laboratory (CVL) through the European Union (EU) funded STOSAR project.

Through STOSAR, FAO has been providing diagnostic materials to strengthen DVS' capacity to detect and control animal diseases such as Peste des petits ruminants, Avian influenza and foot-and-mouth disease (FMD) by availing laboratory testing materials such as real-time PCR detection kits for Avian Influenza, Nucleic acid purification kits, Phosphate Buffered Saline tablets, reaction plates and tubes.

"Thanks to the support from the STOSAR project, the Central Veterinary Laboratory is now in a better position to safeguard Namibia's livestock sector," said Dr Siegfried Khaiseb, Deputy Chief Veterinary Officer in DVS. "The diagnostic materials have strengthened our preparedness and readiness for early detection of diseases such as FMD, which has enabled us to minimize its spread and avert its potentially catastrophic impact on the country's economy."

Maintaining trade

Dr Khaiseb highlighted that the CVL is using the laboratory items for routine testing to enable the effective surveillance of FMD. "The ongoing [FMD] surveillance activities are important to safeguard the livestock sector in Namibia and maintain the country's FMD-free status to ensure continued trade relations with its trading partners, especially for livestock and livestock products," he noted.

Namibia exports large amounts of beef to large markets such as the United States, Europe, South Africa, and China. The country became only the second African country after South Africa to export its beef to China and the first African country to export its well-respected free-range and hormone-free beef to the highly lucrative U.S market.

Apart from the international market, regionally the country has strong trade relations with neighbouring South Africa. In 2020 for example, Namibia exported 96 percent (44 103 heads of livestock) of its total live animal exports in May of that year to South Africa, with the rest going to Angola. South Africa is not only taking up Namibia's live animals but is also the biggest export destination for the country's beef, followed by Norway.

Unlocking potential

Due to the importance of meat and meat products, particularly the export of beef, to Namibia's export earnings, ensuring that meat is disease-free is crucial to meet international food safety

standards. Implementing appropriate, adequate and effective measures to prevent, control and manage disease outbreaks is therefore essential, not only to ensure farmers' incomes and thus food security and livelihoods, but also to ensure public health so that zoonotic diseases are not transferred between wildlife and livestock and then to humans.

The STOSAR project has played a critical role in ensuring that countries such as Namibia, enjoy continued access to the lucrative export markets for meat, whilst continuing to unlock the full potential of its livestock sector.

Article contribution

Phillipus Tobias (FAO Namibia).

Article

FAO, WOAH, SADC and AU-IBAR work together towards controlling and eradicating peste des petits ruminants (PPR) in Southern Africa

The Food and Agriculture Organization (FAO), the World Organization for Animal Health (WOAH), the Southern African Development Community (SADC) Secretariat in collaboration with the African Union InterAfrican Bureau for Animal Resources (AU-IBAR) and the African Union Pan African Veterinary Vaccine Centre (AU-PANVAC) hosted the Third Peste des Petits Ruminants (PPR) Roadmap meeting and Training on risk-based approaches for PPR prevention and emergency response in historically free SADC countries.

Background

Peste des Petits Ruminants (PPR) is a highly contagious and widespread viral disease that continues to afflict primarily domestic, but also some wild, small ruminants. It was first reported in Côte D'Ivoire in 1942. Since then, PPR's geographical distribution has witnessed extensive, spreading to numerous parts of the world.

Out of the 16 SADC Member States, six (6) of them are officially recognized by the WOAH as PPR free with one (1) country officially recognized as having a PPR-free zone, whereas five (5) countries are without WOAH-free status but have never detected PPR. PPR is present (endemic) in the remaining four (4) SADC Member States, posing a serious threat to the rest of the region. The PPR Global Control and Eradication Strategy (PPR GCES), prepared jointly by FAO and WOAH, was endorsed in April 2015 in Côte d'Ivoire.

Subsequently, the PPR Global Eradication Programme (PPR GEP I) was developed to launch the first phase of the strategy's implementation for 2017-2021. The Abidjan conference recommended a review of the strategy implementation after the first five years. In 2021, FAO and WOAH launched the revision of the PPR GEP I to formulate the second phase of the PPR GEP (PPR GEP II). The process of PPR GEP revision is currently ongoing with an expectation of launching the second phase of the PPR GEP in early November 2022.

Working together



The third PPR SADC regional roadmap meeting participants in Gaborone, Botswana in September 2022.

FAO, WOAH, SADC and AU-IBAR led by the PPR Global Control and Eradication Strategy are working in collaboration to (i) eradicate PPR by 2030, (ii) strengthen veterinary services, and (iii) reduce the impact of other major infectious diseases of small ruminants in the SADC Region.

PPR poses a serious impediment to small ruminant value chains and a tremendous threat to sheep and goat health, food security, and smallholder producers' social well-being and livelihoods. Countries that are not PPR infected are being capacitated to demonstrate through evidence and data obtained from extensive surveillance activities the absence to obtain the official WOAH PPR-free status recognition.

From 12 to 14 of September 2022, the third regional roadmap meeting was held in Gaborone-Botswana. The objectives of the meeting was: i) reviewing and updating the PPR epidemiological situation in Southern Africa; ii) updating the progress of countries in Southern Africa along PPR control stages; iii) map out key activities to prevent and control PPR, including projects; iv) identify and adopt next steps for PPR control in SADC countries; and v) identify key capacity gaps and challenges affecting PPR control/eradication in Southern African countries and agree on proposed solutions and recommendations.

The meeting was attended by 35 participants from Angola, Botswana, Eswatini, Lesotho, Malawi, Mauritius, Mozambique, United Republic of Tanzania, Zambia, and Zimbabwe, as well

as representatives of FAO and WOAH headquarters and sub-regional offices, SADC Secretariat, AU-IBAR, AU-PANVAC and Botswana Vaccine Institute.

Following the third regional roadmap meeting, a training on risk-based approaches for PPR prevention and emergency response in historically free SADC countries was conducted from 15 to 16 September 2022 in Gaborone.

The training paved the way for historically free countries in the SADC Region to develop emergency preparedness and emergency response plans and capacitate them in the preparation of dossiers to be submitted to WOAH for the declaration of freedom from PPR.

The objectives of the training were to i) provide an overview of the epidemiology, clinical signs, and diagnosis of PPR in small ruminants and wildlife, ii) describe surveillance activities that can be implemented to demonstrate PPR freedom, iii) describe other requirements necessary for dossier submission, including the development of emergency preparedness and emergency response plan, as well as to iv) assist countries in developing work plans for dossier submission. The training was attended by 26 participants from the following countries: Botswana, Malawi, Mauritius, Mozambique, United Republic of Tanzania, Zambia, and Zimbabwe.

Outcomes and recommendations on eradicating peste des petits ruminants (PPR)

Considering that there are three groups of countries within the region: PPR free, historically free and infected countries, the meeting recommended that:

- **PPR free countries** i) develop or update existing contingency plans; ii) partners support simulation activities to validate the contingency plans; and iii) Member States address challenges regarding the shipment of samples with the support of FAO/WOAH/IBAR/ PANVAC.
- Historically free countries i) countries mobilize resources and upscale PPR surveillance to nationwide coverage and include wildlife; ii) countries intensify awareness campaigns to all value chain players; iii) build the capacities of Member States for dossier preparation; iv) have harmonized regional PPR surveillance; v) organize cross border harmonization and bilateral meetings and vi) countries wanting to be declared free of PPR by 2024 need to submit their dossiers by June 2023. FAO willing to support and WOAH will provide guidance.
- Infected countries there is a need to develop disease trend maps to guide prevention and control interventions through i) emphasis on the importance of strong partnerships and collaborations within the region as we move towards eradication; ii) a need for a communication platform to share experiences and good practices due to different capacity levels of countries; iii) data management and sharing among countries to be strengthened; iv) a need for cross/trans-border harmonization on surveillance and vaccinations as we move towards eradication; v) develop advocacy material for resource mobilization at the country level, and vi) establish a Protection Zone (episystem buffer zone) in south United Republic of Tanzania, Democratic Republic of the Congo, and Angola to protect SADC region by concentrating on surveillance and vaccination.

Article contribution

Boitumelo Mokiya (FAO Botswana).

Plant health component

Given that crop production contributes significantly to the economies and livelihoods of most countries in the SADC region, the STOSAR Project is actively exploring ways to tap into opportunities to increase the productivity and competitiveness of the sector. During the last quarter, the project made major strides towards strengthening the capacities of SADC Member States to protect their cropping sectors and limit the spread of pests through trade and travel. The activities of the STOSAR Project are at the core of FAO's goals, with the Director-General stressing that "Preserving plant health is fundamental to achieve the Sustainable Development Goals. Sustaining plant health is an integral part of our work towards more efficient, inclusive, resilient and sustainable agrifood systems." https://www.fao.org/news/story/en/item/1402920/icode/

Significant progress has been made towards improving the capacity of countries within the SADC Region to effectively address threats posed by transboundary pests through a range of activities implemented in partnership with contracted regional Centres of Excellence. With increased capacity to conduct pest risk analysis, updated national pest lists, improved understanding of sanitary and phytosanitary issues, and implementation of measures to manage key pests impacting trade, Member States have had major successes in improving market access for the region's plant products. In addition to the United Republic of Tanzania which is exporting avocados to India and South Africa, other countries including Zambia and Namibia are also exporting products such as blueberries and soybeans to lucrative regional and international markets. This is a notable achievement which will have a great impact on the economies of these countries and the competitiveness of the region.

Farmers benefit from a training on maize pests.

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The Agricultural Research Council (ARC). Centre of excellence



Providing phytosanitary expertise in plant pest management and diagnosis for the SADC region

The Agricultural Research Council (ARC) is a premier science institution in South Africa. It conducts research with partners, both national and international, and contributes to human capital development. The institution helps to foster innovation to develop and support the agricultural sector within South Africa and beyond its borders.



A STOSAR workshop facilitated by ARC to capacitate NPPOs in SADC.

With the expertise of ARC, the Plant Health and Protection (ARC-PHP) campus has undertaken numerous projects relating to the priority plant pests and diseases of focus by the Support Towards the Operationalization of the SADC Regional Agricultural Policy Project (STOSAR), resulting in the institution being selected as a Centre of Excellence for the SADC region for Fall Armyworm (FAW), tomato leafminer (*Tuta absoluta*) and Maize Lethal Necrosis Disease (MLND).

Under the STOSAR Project, two week-long training workshops were hosted in South Africa in February and March 2020, to enhance the skills of National Plant Protection Organization (NPPO) staff in the identification, biology and management of priority transboundary plant pests. The first workshop focused on FAW and tomato leafminer and the second workshop was on MLND and its vectors. A total of 62 delegates drawn from all of the 16 SADC Member States benefited from the trainings. Knowledge and skills needed to correctly identify priority transboundary plant pests that were transferred to NPPO staff will improve surveillance, monitoring and control of these pests in the region. As a Centre of Excellence, ARC also provided diagnostics expertise for the identification and confirmatory diagnosis of samples from the SADC Member States.

In its final project progress report, the ARC recommended standardization of sampling methodologies for the region and the development of risk assessment models for each identified pest and disease for the SADC region.

Resources

• Training Manuals: Fall Armyworm, Maize Lethal Necrosis Disease & Tomato Leafminer

Article contribution

Ms Robin Lyle, Senior Research Technician, and ARC Project Manager for the STOSAR project.

CABI: Centre of excellence



Strengthening capacity for risk assessment and pest management in SADC countries

The Centre for Agriculture and Bioscience International (CABI) (https://www.cabi.org/) is an international, inter-governmental, not-for-profit organization that improves people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment. CABI's approach involves putting information, skills and tools into people's hands. The organization's 49 Member Countries guide and influence its work delivered by scientific staff based

in its global network centres. Seven SADC countries namely, Botswana, Malawi, Mauritius, South Africa, United Republic of Tanzania, Zambia and Zimbabwe are members of CABI.

Strengthening capacity of SADC member states in partnership with FAO (STOSAR Project)

CABI started working with the STOSAR project in 2021. The organization has provided a broad range of technical support services to SADC countries towards the implementation of the SADC Regional Agricultural Policy.

The capacitation services started by developing the regional strategy for Maize Lethal Necrosis Disease (MLND) as part of a harmonized and coordinated regional response to manage transboundary pests in the SADC region. Following this, CABI assisted several SADC countries to domesticate regional strategies that had been developed under the STOSAR Project. Botswana, Namibia, Malawi, and Zambia received face-to-face support for their national strategy development and/or validation workshops. Overall, technical support enabled the development/finalization, and/or validation of twelve (12) national strategies in five (5) Member States (Botswana, Namibia, Mauritius, Zambia and Zimbabwe), seven (7) of which were validated during the contracted period.

Other achievements attained under the STOSAR Project include an assessment of the SADC region's plant health laboratories to establish their readiness for accreditation. A report on the exercise highlighted the need for on-site training to meet the ISO17025:2017 standard, in addition to the need to strengthen documentation and source equipment to strengthen diagnostics. CABI provides free access/discounted rates for developing countries to access microbial identification services for a limited number of samples per Member Country.

A comprehensive review of new transboundary plant pests threatening the cropping sector of the region was conducted and pest lists were developed for priority tradeable commodities for eight SADC Member States (Angola, Botswana, DR Congo, Malawi, Namibia, Seychelles, United Republic of Tanzania and Zambia). These pest lists are useful to facilitate the development of phytosanitary import conditions which are necessary for gaining market access for agricultural commodities and management of pests.

CABI contributed towards the increased capacity of countries in the SADC region to conduct pest risk analysis (PRA) using online CABI PRA decision support tools including; the PRA Tool (https://www.cabi.org/PRA-Tool/signin?returnUrl=%2FPRA-Tool), the Horizon Scanning Tool (https://www.cabi.org/HorizonScanningTool), and the Crop Protection Compendium (https:// www.cabi.org/cpc), through two regional training workshops. A total of 144 NPPO staff from all 16 SADC Member States benefited from the two regional PRA trainings. Following feedback from trainees, the CABI PRA decision support tools have recently been improved to support collaboration on regional PRAs. Post-training, several countries reported using the tools to conduct PRA to negotiate for market access. CABI continues to provide support to NPPOs to access and effectively use the tools. In addition to training NPPO staff to better use the online PRA tools, the organization supported the review/development of PRA protocols and Terms of Reference (ToRs) for national PRA teams. The development of ToRs for PRA teams in each country is a major step toward ensuring the harmonization of PRA reporting across the SADC region. CABI looks forward to the establishment of a regional PRA team for the SADC Member States which will be critical to strengthening early warning and response systems in the region. CABI in partnership with FAO through the STOSAR Project has enhanced awareness of Sanitary and Phytosanitary (SPS), inter-regional trade, and how this relates to the attainment of the Africa Continental Free Trade Area. A series of webinars were also conducted to sensitize SADC countries on (i) the systems approach for pest risk management, (ii) feasibility and practical applications of ISPMs 4 and 10 (pest-free areas, pest-free places of production and pest-free production sites) and (iii) the critical role played by NPPOs in safeguarding plant health for security and trade.

CABI has contributed immensely towards building the capacities of SADC countries to manage key transboundary pests. Through a number of training workshops and webinars, the organization increased awareness of the importance of sanitary and phytosanitary (SPS) measures and their impacts on crop production, food security and trade; and enhanced the capacities of countries for risk assessment and management. Over 430 staff from NPPOs benefited from training in PRA, various SPS topics and the development of national pest management strategies.

Resources

- Baseline Report on Emerging Transboundary Plant Pests in SADC Region
- Webinar 1: Application of integrated phytosanitary measures to enhance export market compliance
- Webinar 2: Feasibility of establishment & maintenance of pest-free areas for market access: Practical application of ISPMs 4 and 10

Other CABI resources available to SADC countries include the:

- PlantwisePlus Toolkit
- CABI Academy
- CABI Digital Library, the CABI Bioprotection Portal

Article contribution

Rahab Njuge

Universidade Eduardo Mondlane (UEM). Centre of excellence



In-depth phytosanitary research and training to protect plants of economic importance from fruit flies

Eduardo Mondlane University (UEM) is the oldest and biggest public institution of higher education in Mozambique, located in Maputo, the capital city. Founded in 1962, the UEM has 11 faculties and 6 colleges and is a comprehensive and multidisciplinary institution focusing on teaching, research and extension services in the context of education, science, culture and technology. The Faculty of Agronomy and Forestry Engineering (FAEF), was founded in 1963 and is the largest and oldest agrarian higher education institution in Mozambique. The plant protection department leads research activities focused on the management of several pests of economic importance (particularly invasive pests) such as the oriental fruit fly, led by Professor Domingos Cugala, Associate Professor, IPM and biological control specialist. As a result of this research, an article on the susceptibility of bananas, Cavendish Williams variety, to the fruit fly, Bactrocera dorsalis, which indicated that the green banana is not a host to the invasive fly of the fruit was published. This led to the lifting of the ban on banana exports to the Republic of South Africa.

UEM partnership with FAO (STOSAR Project)



Field day at "Quinta das abelhas", Boane, Maputo. Organized for NPPOs in SADC under STOSAR.

The Faculty of Agronomy and Forestry Engineering (FAEF) started working with the STOSAR project in December 2019 to develop the capacities of SADC countries on Asian Fruit Fly *Bactrocera dorsalis* inspection, identification and dissemination of harmonized management strategies and guidelines. UEM implemented several activities in line with its contractual agreement with FAO i. conducted a face-to-face regional training on 'Fruit fly Identification, Biology, Ecology, Management Strategies and Impact Assessment' in Maputo in January 2020. Twenty-eight (28) participants from plant protection institutions of SADC countries, FAO, International Center of Insect Physiology and Ecology (ICIPE); Royal Museum for Central Africa (RMCA) and FAEF attended the training which equipped them with the necessary technical skills to manage fruit flies; ii. supported the development of the SADC Region Management Strategy for Fruit Fly; iii. reviewed data sheets for Mozambique, Eswatini and South Africa; iv. established a system for sample identification (surveillance) and set up a mechanism for SADC countries to submit samples to UEM, and v. created an information sharing platform/network for SADC countries on Asian Fruit Fly. The FAEF continues to be a leading institution in fruit flies research in the SADC region

providing laboratory identification services. The faculty has adequate requirements (laboratories, expertise, knowledge and work done in fruit flies, including, parasitoids).

Recommendations for future interventions

It is believed that biological control can provide sustainable control of fruit flies. Protocols for parasitoid rearing, releases and recovery were explained to participants as well as the need to conduct farmer's sensitization, so that good parasitoid conservation practices can be adopted. Native parasitoids (Psyttalia cosyrae, Tetrastichus), predators (such as lizard, bird, spider, weaver ant - Oecophylla smaragdina, O. longinoda), fungal pathogens (Metarhizium anisopliae) also play an important role in fruit fly control.

Control strategies to reduce the Fruit Fly populations to improve crop productivity and access export markets were discussed with SADC countries, and an IPM package incorporating the following best practices was promoted: biological control, sanitation, male annihilation technique (MAT), Bait application techniques (BAT), and also post-harvest treatment. The Regional management strategy for Fruit Fly should be complemented by intense awareness, Communication and Advocacy, Training, Monitoring and Evaluation, Legislation, Technical Assistance, Research and Transparency.

Future partnerships with the FAO could include the establishment of parasitoid-rearing units to enable SADC countries to start massive parasitoid field releases for B. dorsalis control to reduce the Fruit Fly populations to levels that will limit economic losses. This will result in reduced losses in fruits and vegetables caused by fruit flies and improve the quantity and quality of produce, thus, expanding opportunities for regional trade in plant products.

Article contribution

Laura da Graça José Canhanga (PhD) and Domingos Raquene Cugala, (PhD)

Stellenbosch University. Centre of excellence



Sustainable banana production through prevention, early detection and management of banana fusarium wilt in Southern Africa

Stellenbosch University (SU) is located in the Western Cape, South Africa. The University is home to an academic community of 29 000 students, including 4000 foreign students from 100 countries, and 1000 academics. It is among South Africa's leading tertiary institutions and is internationally recognised as an academic institution of excellence. The research group on banana Fusarium wilt at SU has been working on the topic for the past 23 years, with expertise in pathogen biology, detection and management. The group has considerable international collaborations and hosts the largest collection of the banana Fusarium wilt pathogen in the world. In Africa, SU cooperates with partners in Mozambique on Fusarium wilt tropical race 4 (TR4) and participates in research and training throughout East and Southern Africa. The university has the facilities to do world-class research on banana Fusarium wilt tropical race 4 (Foc TR4), and team members are regularly invited as keynote speakers at international conferences.



Banana Fusarium Wilt Field surveillance.

Stellenbosch University became involved in the STOSAR project in December 2019 and implemented the following activities to support the 16 SADC countries: i. trained forty-nine delegates from National Plant Protection Organizations (NPPO) and National Agriculture Research System (NARS) staff on banana Fusarium wilt TR4, its biology, diagnosis, management and the risk it poses to growers. An additional six staff from the United Republic of Tanzania's NPPO were provided with follow-up training in preparation for national surveillance of major banana growing areas ii. provided technical support and advice on surveillance and collection of samples, iii. set up a sample identification system to identify Foc strains from SADC countries, iv. assisted SADC countries with the development of national contingency plans, v. developed the Regional Strategy for Fusarium wilt TR4, vi. established the risk posed by Foc TR4 to four SADC Member States: Comoros Islands, Democratic Republic of the Congo, Madagascar and Malawi, vii. co-organised and virtually hosted the 1st International Conference on banana Fusarium Wilt in Africa, with more than 400 registered participants, and viii. received and identified strains of the Fusarium wilt fungus from Botswana, the Democratic Republic of the Congo, Malawi, Mozambique, South Africa, the United Republic of Tanzania and Zambia.

Major products developed under the STOSAR project included: a. training materials (technical guides and videos), b. a detailed regional strategy for Fusarium wilt TR4, c. conference proceedings summarizing presentations from a range of experts from the African continent and abroad, d. a report of the risk posed by Foc TR4 to the SADC region, with risk maps for the four countries, e. a peer review publication of Fusarium wilt TR4 in Southern Africa (under review), f. a policy brief on the risk posed by Fusarium wilt Tropical Race 4 to countries in Southern Africa.

Key impacts of the interventions on SADC member states

- Significant human capacity was built among NPPOs in SADC countries, which will enable them to identify and deal with Fusarium wilt TR4 in their countries. Surveillance has shown that three races of the Fusarium wilt fungus (Foc) are present in the SADC region, and that Foc TR4 is present only in northern Mozambique and Mayotte Island, and that the popular banana varieties grown in Southern Africa are all susceptible, making banana production in the region extremely vulnerable to Foc TR4.
- Findings of the assessment of the risk posed by Foc TR4 to four SADC countries (mentioned earlier) showed that awareness, border control and the availability of disease-free planting material in countries should be improved to protect growers against introduction of the pathogen, as banana farmers in the SADC region are mainly small and subsistence growers who do not have the means to protect themselves against the Fusarium wilt TR4.
- The international conference created significant awareness about Fusarium wilt TR4 on the African continent, with the polls answered by participants indicating that similar information-sharing platforms are required.

Foc TR4 gaps in Southern Africa and future prospects

There are some significant gaps and needs related to Fusarium wilt TR4 management in Southern Africa. The most important is the unavailability of options to deal with the disease once found in small-grower fields. The only efficient way to manage the disease is to replace susceptible with resistant bananas, however resistant varieties to replace popular local bananas are not available.

Further training of scientists, including those outside NPPOs, in disease diagnosis and prevention, is required, as well as awareness campaigns and the supply of clean planting materials.

Banana is an important crop in the SADC region for food security and income generation. Most Member States produce the crop for local markets, with limited exports taking place from Mozambique and the United Republic of Tanzania to neighbouring countries. The early detection of harmful pathogens, and means to prevent and manage these, are crucial for sustaining banana production in the region, and potentially provide export opportunities.

Resources

- Banana Fusarium Wilt Conference Report
- FAO is a collaborating organization of the African Consortium for Foc TR4, and seven SADC countries are partners. Information on banana Fusarium wilt in Africa can be obtained from the consortium's website: http://www.sun.ac.za/english/faculty/agri/plant-pathology/ac4tr4

Article contributor

Prof. Altus Viljoen and Dr Diane Mostert

Best practice article

Zambia: Pest risk analysis opens up export opportunities



Blueberry fruit being packaged for the export market.

Through the STOSAR Project, the National Plant Protection Organization (NPPO) of Zambia has benefitted from various capacity-building initiatives such as Pest Risk Analysis (PRA) that equipped the country with Pest Lists to conduct market access negotiations for horticultural commodities that included blueberries, soya bean and stevia (a natural sweetener and sugar substitute derived from the leaves of the plant species stevia rebaudiana).

Members of staff from Zambia's Plant Quarantine and Phytosanitary Services (PQPS), which is one of the departments under the Ministry of Agriculture (MoA) and the NPPO in Zambia received Pest Risk Analysis training facilitated by CABI in July 2021 and August 2022.

Before the Pest Risk Analysis and Data Management (PRADM) Unit at the PQPS received the PRA online training, they heavily relieved on literature review and internet searches on pests associated with a given commodity, to come up with a pest list, as well as perform an overall pest risk analysis. However, following the training sessions with CABI and access to the PRA online tool, the PRADM unit now easily generates pest lists for almost any crop using the tool, as well as conducting the entire PRA process within the tool.

According to the plant health officers that participated in the workshop, the PRA tools trainings were very informative and helpful. "The training that I found most beneficial was on how to use the Horizon Scanning tool to generate analysis reports, said Emma Mazimba, a plant health officer.

"The CABI PRA tool has been quite useful for generating Pest Lists, as well as checking the status of the pests of concern for countries like China, the geographical distribution of pests of concern, host range, the biology of the pest and other important information about pests of concern which are especially useful when conducting market access negotiations for horticultural commodities like blueberries, soya bean and stevia" she added.

In addition to this, the PQPS received copies of the guide on Pests and Pathway initiated protocols. The guide will equip the PQPS with better preparedness, especially on the early warning systems, incorporation of ideas and concepts, as well as provision of quality input into the strategy-making process.

Following the PRA workshop, the participants from PQPS resolved that going forward, they will conduct all PRAs within the Horizon Scanning analysis tool, especially after Pest Lists have been generated. Course participants were able to cascade the training they received to other PQPS staff who were unable to participate in the FAO-CABI workshop, for purposes of information and skills transfer.

Thanks to some laboratory equipment and consumables procured under the STOSAR Project, processes that precede or support PRA at the PQPS department have been enhanced considerably.

The Zambia NPPO is now confident that they will in future, continue compiling quality PRAs, which can be published and shared with a wide range of trading partners during market access negotiations.

Article contributions

Emma Mazimba (Zambia Plant Quarantine and Phytosanitary Services) and Zuba Mwanza (FAO Zambia).

Human interest story

South Africa: STOSAR equipping youths to join the fight against hunger



Azaria inspects his tomato crop for pests at his farm.

investment the Azaria had ploughed into the farming venture.

Azaria Miloele's passion for farming led him to study for an agriculture-related degree a Bachelor in Technolgy in Animal Production at the Tshwane University of Technology, where he learned more about animal husbandry and agroecology concepts and techniques.

Armed with new knowledge, youthful Azaria took over his father's 40-hectare farm with the dream of transforming it into a more productive piece of land by applying the agroecology techniques he had just learnt. Although his training was in animal production, he also had a passion for crops, and immediately started producing tomatoes for the local market.

However, his joy was short-lived when an incursion of caterpillars and moths invaded their tomato and maize fields and almost ruined that

"We observed tomatoes rotting at an alarming pace and dropping to the ground. In our maize field, the newly sprouted maize plants would barely survive as ragged holes developed on the leaves because an army of caterpillars ate everything green in sight", said Azaria.

However, these aggressive pests did not discourage Azaria from pursuing his farming ambitions. Instead, they made him more determined to find a solution that would salvage his source of livelihood to meet the immediate food needs of the surrounding community.

The turning point was when the Support Towards Operationalization of SADC Regional Agricultural Policy (STOSAR) Project facilitated that a Department of Agriculture and Rural Development team conduct surveillance and outreach activities on farms in Mpumalanga Province. "This outreach program equipped me with new knowledge. Through STOSAR, I learnt that my tomatoes were being affected by *Tuta absoluta* whilst the Fall armyworm was attacking my maize crop", said Azaria.

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"We were taught to control these destructive pests to protect our crops and improve our harvests. STOSAR also provided us with Tuta Absoluta Sticky Delta Traps, Methyl Eugenol (ME) Traps, and Cue-Lure (C-L) Traps to tackle the FAW, Tuta absoluta moths and fruit flies that were detected on my farm during the surveillance exercise. These traps have helped successfully control these plant pests on my farm," he concluded with a smile.

Article contribution

Steven Lazaro (FAO South Africa).

STOSAR communications

This quarter, the STOSAR communications team continued to work collaboratively to increase project visibility and enhanced project communications. Successful engagements with the media also resulted in the project being featured in news articles in prominent newspapers with a wide circulation both in hardcopy as well as a wide digital reach. The STOSAR project leveraged digital platforms including the STOSAR Project website, the STOSAR Flickr account and the @FAOSFSAfrica handle collectively reaching well over 30, 000 individuals online.

With the relaxation of COVID-19 restrictions, more face-to-face activities were carried out by the Member States and enabled the development and printing of project brochures and fliers for distribution to farming communities. Some project visibility products were produced to enhance stakeholder and donor visibility. STOSAR Communications also supported the development of several publications that include policy briefs, regional strategies and guidelines among other products.

Summary of key communications achievements



STOSAR FMD awareness raising in rural communities in South Africa.

Newspaper articles

Mass media continues to be engaged at the SADC Regional and Member State levels to raise the visibility of STOSAR Project activities. Newspaper coverage for key project events was received; including the recent AIMS launch that was held in Gaborone, Botswana. The STOSAR-related newspaper articles produced this quarter can be accessed at the links below:

- New SADC Platform to Boost agric potential
- Agro ministry, FAO develop plant health strategy documents
- Govt, FAO partner to fight animal diseases

FAO website articles

FAO website articles listed below were published to showcase STOSAR's regional activities and achievements in the following written pieces:

- FAO and SADC launch Regional Agricultural Information Management System
- FAO and SADC facilitate development of National Pest Management Strategies through European Union-funded STOSAR Project

Brochures, fact sheets and fliers

Collectively, the SADC Member States developed and produced over 42 000 STOSAR-related publications that include brochures, posters, factsheets, fliers and infographics that were disseminated to farmers and various community stakeholders mainly for purposes of awareness-raising on transboundary pests and animal diseases of concern. The STOSAR factsheet was uploaded to the project website for a wider reach.

Some of the publications such as brochures were translated into local languages to enable rural communities to have a better understanding of the information being shared. For example, in the United Republic of Tanzania, brochures were translated into Swahili and in South Africa, brochures were translated into Zulu, Xhosa, Sotho and other indigenous languages spoken there.

• STOSAR factsheet



Visibility materials

Visibility materials were developed to enhance project and donor visibility in line with European Union, SADC and FAO corporate branding guidelines. Developed materials included lanyards, pens, branded notebooks, folders, mugs, coasters, golf shirts, caps, branded USBs, bottle openers, lab coats, khaki shirts and x-frame banners.

> FAO Eswatini produced and handed over 70 branded reflector vests to the Ministry of Agriculture under the STOSAR Project FAO Eswatini produced and handed over 70 branded reflector vests to the Ministry of Agriculture under the STOSAR Project.

New publications

The communications team supported the development of the following publications:



Publications that include a SADC regional phytosanitary guide and three policy briefs produced by the STOSAR project

- SADC Regional Guide. Phytosanitary Import/Export Inspection and Decision-Making
- Policy Brief. Improving Implementation of the Systems Approach for Pest Risk Management in Southern Africa
- Policy Brief. Promoting Sustainable Access to Markets for the SADC Member States
- Policy Brief. Key Sanitary and Phytosanitary Issues Constraining the Efficient Movement of Regional Ports of Entry/Exit and How to Address them.

Social media

The @FAOAfricaSFS Twitter handle is currently being used to share project tweets. If you wish to follow and receive project updates you can use the #STOSAR hashtag on the platform. Social media graphics have been developed with the European Union, SADC and FAO logos to enhance project visibility. You can view some published #STOSAR tweets below:

- SADC AIMS Official launch
- SADC AIMS regional achievements
- STOSAR equips farmers with insect traps
- Zambia plant health strategy validation workshop
- Namibia equipped with lab equipment and consumables
- Namibia conducts Pest Risk Analysis
- CABI PRA training
- Zimbabwe strategy validation workshop
- South Africa carries out FMD awareness raising in rural communities
- AIMS regional training
- Mauritius distributes insect traps
- CABI supports Mauritius domesticates Tomato leafminer Regional Strategy
- STOSAR Bulletin 1st Edition (in case you missed it)!

The STOSAR project has a vibrant Flickr account with a selection of photos of various project activities. The STOSAR Flickr account also includes an image library containing images of key transboundary plant pests and animal diseases that have been documented in the region for reference purposes.

Video Clips

SADC member states are being supported to develop awareness-raising video clips on foot-and-mouth disease, peste des petits ruminant and highly pathogenic avian influenza. Through the STOSAR project, FAO South Africa translated an FMD awareness-raising video clip developed by the European Commission for the Control of Foot-and-mouth Disease (EuFMD) into 11 of the most widely spoken languages in South Africa that included Afrikaans, English, Ndebele, Pedi, Siswati, Setswana, Sotho, Venda, Xhosa, Xitsonga and Zulu. The clips are targeting rural farmers so that they are more vigilant when it comes to tackling this transboundary disease following reports of the FMD 'O' serotype in the region.

• South Africa FMD video translations

FAO EDF 11 Project GCP/SFS/004/EC

Agricultural information & market access for all

Project objective

The overall objective of this action is to accelerate progress towards implementation of SADC regional integration, which focuses on: i. enhancing information on agricultural production, sustainability and competitiveness for evidence-based decision-making; and, ii. improving access to markets through implementation of plant and animal pest and disease control strategies at the regional level.

Beneficiaries

Member States of the Southern African Development Community (SADC), namely: Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia, Zimbabwe.



Food and Agriculture Organization of the United Nations (FAO) Subregional office for Southern Africa STOSAR Project (SADC RAP - EDF 11)

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