



BIOPESTICIDES

A Quarterly Newsletter of the ICGEB Biopesticides Group



The Southern Africa Biopesticides Project

Residue mitigation studies in Kenya and Tanzania: In May 2022, the project's first of two studies evaluating the efficacy of biopesticides, as potential alternatives to late-season pesticides contributory to residue violations, began. The incorporation of these biopesticides in pest control programs could enhance compliance with Maximum Residue Limit (MRL) requirements in export markets. The on-going Kenyan study (focusing on mango) is anticipated to conclude in October 2022, with the Tanzanian study (focusing on avocado) planned for September-December 2022.

Functional capacity building: In collaboration with the Asia Pacific Association of Agricultural Research Institutions (APAARI), draft strategies to address the functional skills capacity needs of project stakeholders was developed. These strategies were based on a survey undertaken by stakeholders in February 2022.

Regulatory harmonisation: As a culmination of several virtual meetings, the Project Technical Working Group (TWG) on regulatory harmonisation participated in a two-day in-person workshop in Cape Town, South Africa from 23-24 June 2022. During this workshop, the TWG reviewed a working document that had been put together based on suggestions collated from previous meetings. This document borrowed from provisions of existing biopesticide regulations and guidelines; particularly the South African biopesticide regulations and the East African Community biopesticide guidelines. A first draft of the harmonised regulatory biopesticide guidelines for the Southern Africa region will be generated from this revised working document by September 2022.

Legal framework review: The [publication](#) of the legal framework review for the participating project countries has been revised and updated. This review considers the current legislation governing pesticides (and biopesticides), the respective processes for the registration of such products, and the requisite protocols to obtain legal status for harmonised biopesticides regulations per participating country.

Controlling Striga, One Toothpick at a Time

Claire Baker (Director and Co-founder: The Toothpick Project)

With great excitement, I share huge news from [The Toothpick Project](#): in November 2021, our pilot company in Kenya, Toothpick Company Limited, received full commercial approval for our bioherbicide, Kichawi Kill™ ('Kichawi' is Swahili for 'magic'). After research and development in Kenya since 2008, this regulatory approval makes our bioherbicide one of the first in the world to reach this major milestone.

Our bioherbicide uses selected strains of *Fusarium oxysporum* f. sp. *strigae*, host-specific to *Striga hermonthica* (witchweed). Striga is an invasive parasitic weed that attacks the roots of maize, sorghum, millets, sugar cane, cowpea, etc., and reduces crop yield by 20 –100% on 40 million small-holder farms in sub-Saharan Africa. Our technology allows farmers to affordably restore their crop yield.



Toothpicks with various inoculum
(Source: The Toothpick Project)



Our next steps include: fine-tuning our distribution in Kenya with the UN World Food Programme (WFP); commercialising a new seed coating distribution method (projected approval in 2024); continuing partnerships with Toothpick Science Team members in twelve other countries to launch their commercial trials; simulated application of the harmonised guidelines, being developed by ICGEB, to review the product in order to assess if the guidelines are fit-for-purpose; and expanding research in the USA with a focus on herbicide-resistant weeds and reducing greenhouse gas emissions.

NemaBio – A Local Biopesticide Company

Sheila Storey (Managing Director: NemaBio)

Entomopathogenic nematodes (EPNs) are a natural biopesticide that, in symbiosis with bacteria, kill the soil stages of certain beetles and moths. They are therefore suitable candidates for inclusion in integrated pest management (IPM) programmes. Since the South Africa National Environmental Management: Biodiversity Act, 2004 (NEMBA) largely prevents the import of foreign organisms, research began in 2006 to find local EPN isolates suited for use - particularly in the fruit industry - and thus help growers access export markets.



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NemaBio was established in 2015 to commercialise the local isolates. Funding was sourced for various MSc and PhD studies to optimise mass production, find a suitable formulation, conduct bioassays, and for registration trials.

It has been a long and arduous road with many setbacks, but we have reached the stage where investors are being approached. The biotech space is difficult with many challenges. However, we are thankful for the support from the Technology Innovation Agency (TIA) and Cape Innovation and Technology Initiative's BioCiTi, as well as funding from various horticultural grower entities.

Ours will be the first registration of a local EPN product in South Africa, although the biggest hurdle remains the legal compliances required to finalise registration.



A Mealworm larva infected with EPNs (Source: NemaBio)

"A key stumbling block to reducing over-reliance on synthetic chemical pesticides in many countries in Southern Africa is the lack of effective policy frameworks to promote the inclusion of sustainable alternatives, such as biopesticides, in pest control programmes. The Southern Africa Biopesticides Project is playing a significant role in the development of such policy frameworks at a regional and, ultimately, country level."

- Mr Kenneth Chipere, *Principal Research Officer: Pesticide Registration, Research Services Division, Ministry of Agriculture, Mechanization and Irrigation Development, Zimbabwe; and member of the Southern Africa Biopesticide Projects' Technical Working Group on regulatory harmonisation.*



Up-coming Events in the Biopesticide Sector

- 27 July 2022: [African Regional Priority Setting - Inception Workshop](#). (Virtual)
- 31 July - 4 August 2022: [2022 International Congress on Invertebrate Pathology and Microbial Control, 54th Annual Meeting of the Society of Invertebrate Pathology \(SIP\)](#), Nelson Mandela Bay, South Africa.
- 5-9 September 2022: [15th Workshop of the IOBC – MRQA Working Group, "Delivering on the Increasing Demand for High Quality Invertebrates"](#), Bologna, Italy. Joint meeting of IOBC-Global Working Group on Mass Rearing & Quality Assurance (MRQA), Association of Natural Biocontrol Producers (ANBP), International Biocontrol Manufacturers' Association (IBMA).
- 12-14 September 2022: [New IPM: A Modern and Multidisciplinary Approach to Crop Protection](#) - International Symposium and Networking Event, Swansea University, Wales, UK.
- 14-16 September 2022: [Plant Health, Agriculture & Bioscience Conference \(PHAB 2020\)](#), The Hague, Netherlands.
- 25-29 September 2022: [PheroFruits 2022. Joint Meeting of the IOBC-WPRS Working Groups "Pheromones and Other Semio-Chemicals in IP" & "Integrated Protection of Fruit Crops"](#), Girona, Spain
- 16-21 October 2022: [13th Arab Congress of Plant Protection, "Plant Health for a Secure and Safe Food"](#), Hammamet, Tunisia.
- 24-26 October 2022: [ABIM 2022, Annual Biocontrol Industry Meeting](#), Basel, Switzerland.
- 26-28 October 2022: [Workshop "Fall Armyworm Control: Challenges and Opportunities for the Use of Biopesticides"](#), Cape Town, South Africa.

ICGEB Fellowship and Grant Opportunities

- [ICGEB South African Women in Biotechnology Programme \(SAWBP\) PhD Fellowship](#). Closing date for applications: 4 August 2022.
- [ICGEB Arturo Falaschi Postdoctoral Fellowship in Life Sciences](#). Closing date for applications: 30 September 2022.
- [ICGEB Arturo Falaschi short-term PhD Fellowship](#). Closing date for applications: 30 September 2022.
- [ICGEB SMART Fellowship](#). Closing date for applications: 30 September 2022.

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