PHI Programme impact at PHYLA

A recent PHI Programme site visit to the PHYLA Hortgro phytosanitary facility confirmed a culture of continued innovation. By Desireé Thompson

The Post-Harvest Innovation (PHI) Programme Steering Committee meeting took place on 17 September at the Hortgro Science offices in Stellenbosch. Thereafter, five PHI researchers delivered project presentations, followed by a site visit to the PHYLA Hortgro phytosanitary facility. Four of the current PHI research and development (R&D) projects are being conducted at this establishment.

The Department of Science and Innovation (DSI) and industry visit to PHYLA on 17 September was initiated as part of the DSI oversight role, and because these four current R&D research projects under PHI-5 are being conducted at this phytosanitary facility:

- Cold disinfestation protocol development for oriental fruit fly in pome fruit.
- Ultra-low oxygen and nitric oxide treatment for pests in pome and stone fruit.
- Ozone fumigation as post-harvest phytosanitary treatment.
- Ethyl formate fumigation and alternative application methods.

Dr Johnson, Dr Smit and Terence Asia are part of the research team of the four projects, whilst two students (MSc and PhD) and one postdoctoral fellow are participating in some of these projects. Altogether nine non-academic interns provide the technical assistance of which at least three received a contract of employment from 1 October 2024, because of their project involvement.

The PHI Programme is a public-private partnership between the DSI and the Fresh Produce Exporters' Forum (FPEF), with the latter as the implementing agent.

PHI Programme mission and progress

The PHI Programme mission is to create a culture of innovation through funding opportunities to deserving applicants. They are then tasked with the pursuit of creative solutions for the technology gaps identified in the fresh horticultural export value chain. The DSI provides funding for the PHI Programme through its Sector Innovation Fund (SIF), and the industry matches the R&D project costs proportionately.

1

2

1: Dr James Mehl (Technical Specialist: Market Access & SAAGA, SALGA Research) on the extreme left, Sunita Kalan (Sector and Local Innovation – DSI), Dr Renate Smit and Dr Shelley Johnson at PHYLA 2: Interns at PHYLA, inoculating pome fruit for phytosanitary trials

3

3: Postdoctoral research fellow Marehette Liprini (extreme right) in discussion with Sunita Kalan (DSI) on the extreme left, Anton Kruger (FPEF CEO) and Marinda Roux (FPEF Financial Manager) 4: Terence Asia explaining insect trials on codling and false codling moth

Currently in its fifth phase (PHI-5), the PHI Programme commenced in April 2022 and concludes on 30 June 2026. Thirteen R&D projects are being conducted under PHI-5 at various research institutions, including ExperiCo, AgriSMART SA, Stellenbosch University (SU) and the University of KwaZulu-Natal. Industry partners of the PHI Programme are Hortgro, SATI, Subtrop/SAAGA, Cape Flora SA and Berries ZA.

Opportunities

The Programme offers inspiring opportunities to students and interns. Focused on high-end skills development and transformation, the Programme incorporates mostly historically disadvantaged post-graduate students and interns who participate in selected R&D projects. PHI project funding for students and interns is channelled through bursaries, stipends, co-funding or salaries.

Dr Renate Smit was a student beneficiary of PHI project funding. She started her journey with the PHI Programme during a previous third phase of the Programme (PHI-3) when she participated as a PHI-funded MSc bursary student in the project, "CATTS as a post-harvest treatment for chill-sensitive plum cultivars and associated phytosanitary insect pests", led by Dr Shelley Johnson at SU for Hortgro. Today, Dr Smit is an entomologist, researcher and manager at the PHYLA Hortgro phytosanitary facility.

4

At the conclusion of the project – which was initiated in 2015 – and her MSc studies in 2017, Smit's master's degree was upgraded by a panel of internal (SU) and external examiners to a PhD in Entomology. This was a remarkable feat. Thereafter, Dr Smit conducted her postdoctoral studies (under PHI-4) on ethyl formate fumigation and how to upscale it to cold-room level.

The challenge and thrill of expansion

It was amidst Dr Smit's project – also led by Dr Johnson at SU for Hortgro – that the building of a fumigation cold room was initiated via PHI funding.

However, the building concept was subjected to specific governmental criteria for compliance. And being in the throes of the global Covid-19 pandemic in 2020, related circumstances caused widespread disruptions. These all culminated in a need for additional funding, which prompted Dr Smit to submit such a proposal to Hortgro. Funding approval was then followed by construction of the PHYLA Hortgro phytosanitary facility, which was officially launched in January 2023.

Today, the PHYLA facility provides opportunities for training, knowledge transfer and capacity building for researchers and students at SU and other institutions. PHYLA also provides access to various insect colonies and access to world-class cold sterilisation and fumigation infrastructure.

The success achieved thus far attest to the impact of the PHI Programme. It's a critical platform from which to facilitate and support post-harvest research, development and innovation. Plus, it provides excellent opportunities and contributes meaningfully to capacity building and skills development. These all enhance the global competitiveness of the South African fresh horticultural export industry.