SAMAC Research and Development Newsletter **JUNE 2023**

Research Networking Day 2023

The annual Research Networking Day/s was hosted on 8 and 9 June 2023 at the Birchwood Hotel and Conference Centre in Gauteng. The aim of this event is to focus on active SAMAC research projects with researchers, members of the various SAMAC R&D structures and technical advisors in the industry to foster collaboration, problem-solve and identify gaps.

Some of the topics discussed during the twelve sessions over one and a half days included diseases such as root rot, flower blights and die back, the usual suspects such stink bugs and the macadamia felted coccid, as well as cultivars and physiology. The event was hugely successful with lively discussions and has become a highlight to all those involved in the SAMAC R&D "machine".

Elrea Strydom (SAMAC R&D Manager) and Anthony Goble (SAMAC Vice-Chairperson and Director: Research and Development).

Lizel Pretorius, CEO of SAMAC.

What is happening with plant protection products?

Farm to Fork (F2F) strategy as part of the Green Deal

The main aims of the F2F strategy are to reduce the use of pesticides and fertilisers by 50% and 20% respectively, to reduce the use of antimicrobials by 50% and to ensure 25% of EU agriculture is organic by 2030. A mirror clause will mean that many regulations applied to EU farmers will also be applied to growers in countries exporting agricultural commodities into the EU. This will mean that despite actives being registered for use in South Africa, the reduction of maximum residue levels (MRL's) for said actives will prevent South African growers from using these products if the commodity will be exported to the EU.

For example, there are currently 48 products registered against stink bugs in South Africa, of which 39 contains either synthetic pyrethroids or organophosphates, 5 are neo-nicotinoids, and 1 is microbial. New products are being developed and have been submitted for registration, including lipid biosynthesis inhibitors. These products are target-specific, as opposed to broad-spectrum contact insecticides, and management practices such as pruning and scouting and will be important for their successful use.

Global Harmonised System

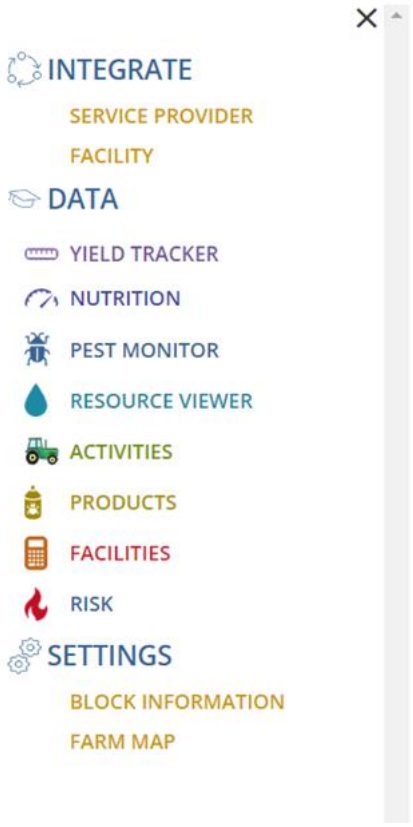
A ban on Class1a and 1b products will come into effect by June 2024. Products registered for use on macadamias which will be affected include ethyelene dibromide (nematicide), glufosinate-ammonium, quizalofop-P-tefuryl (herbicides), propiconazole (fungicide) and mineral oil. The ban will also include 14 co-formulants, and if omittance of these co-formulants change the original product composition by more than 10%, the product/formulation will need to be reregistered. SAMAC is in constant communication with registration holders and CropLife and will inform growers once more concrete information is available.

Growers are reminded to consult MacShield, which is accessible through the SAMAC app, or lists of registered products and MRLs circulated for the latest registered products.

Integrator is coming!

Integrator is a Future Orchards project at SAMAC focussed on creating a consolidated platform with information shared by growers, specialist service providers and other industry role players. The aim of Integrator is to facilitate, through big data analysis, increased macadamia profit margins. The success of Integrator relies heavily on grower participation through sharing information with the platform at block level. We aim to understand the dynamics of significant factors influencing yield, kernel recovery rates and macadamia quality.

To this end we promote accurate record keeping, integrate information from specialist service providers and apply the data to establish best practices tailored to a grower's specific conditions. Grower information is handled with the highest level of confidentiality, and the grower has full control over integration with third parties. We are excited to let our members know that Integrator will be launched soon. ***Visit the SAMAC Website and App to share information and get results!***



SAMAC
Macadamias South Africa NPC

WELCOME TO THE INTEGRATOR

The platform collects and portrays data from Industry Players to provide grower members with insight into farming practices, that can improve yield and quality. The dashboard visually outlines the farming business.

Macadamia felted coccid: Updates and action plans

When the macadamia felted coccid (MFC) was accidentally introduced into South Africa during 2017, it was done so without its compliment of natural enemies. In lieu of the expected regulatory effect of these beneficial insects, populations of the MFC increased unabated with resultant vegetative necrosis and accompanying yield losses. In contrast, the MFC rarely becomes a significant pest in its country of origin (Australia). Presumably this is because of the regulatory effect of its natural enemies. This situation is therefore ideal for the implementation of typical classical biological control in South Africa.

Macadamia felted coccid associated symptoms.

Photo: Dr Schalk Schoeman (SAMAC).

South African entomologists have considerable experience with this kind of situation and our country has a proud track record of many successful biological control programmes. In cases like this, typically, a South African researcher will have to be sent to Australia where coccid colonies will be scrutinized for natural enemies. Biological studies will then have to be undertaken to determine which of these enemies contribute significantly to biological control. These insects will then have to be bred in captivity and when numbers reach significant quantities, they will have to be exported to a quarantine facility in South Africa where the second phase of the project namely host specificity testing will commence. This means that the natural enemy will have to be tested against similar indigenous insects and it must be conclusively proven that it is not detrimental to our indigenous insects before release approval is secured.

The parasitoid wasp of the macadamia felted coccid, *Metaphycus macadamiae*.

Photo: Nayes *et a*l, 2020)

The second importation of this beneficial insect will then also occur whereafter host specificity testing will commence at the ARC and FABI. It was decided to task both organisations with this important research as the collaboration should double the speed of host specificity testing while reducing the risk of a possible force majeure by 50%. The team involved with host specificity testing furthermore indicated a time frame of three years. This is very short but is made possible by the specialist natures of both insects as well as previous supporting work done by the Hawaiians.

Macadamia felted coccid on a macadamia leaf.

Photo credit: Dr Colleen Hepburn.

Fortunately for South Africa, this pest found its way to Hawaii a few years earlier and the Hawaiians already went through this expensive and time consuming first step of the process. Even more fortunately, they were willing to share this insect with us at no cost which undoubtedly saved the South African macadamia industry millions. Several stumbling blocks unfortunately slowed progress somewhat. Least of this is that the USDA researchers could only release the parasitoid to South Africa after the final taxonomic studies were completed.

This was done during 2021 but the Covid 19 pandemic made international travel daunting during that period. Nevertheless, the parasitoid was imported but numbers were too low, and the original colony died out.

During the spring of 2023 South African researchers will visit the USDA laboratories in Hawaii where they will gain first-hand knowledge on how to mass rear the parasitoid.

SAMAC is funding the following strategically selected projects:

1) Importation, host specificity testing and release of the parasitoid *Metaphycus macadamiae* from Hawaii.
2) Evaluating indigenous mortality causing agents as well as population modelling with the aim to facilitate chemical control.
3) Evaluate pathogens from the National collection in Pretoria against the MFC.

Unfortunately, the parasitoid will not be a silver bullet as successive contact sprays against stink bugs will disrupt natural levels of biological control that will lead to secondary outbreaks of the MFC.

The SAMAC Crop Protection Research Committee is currently investigating various aspects of stink bug management that will reduce the industry reliance on these types of products.

Additionally, SAMAC and CropLife SA approached all pesticide companies in South Africa though the Office of the Registrar for emergency registration of selected pesticides.

This process is nearly complete and with a bit of fortitude it should yield tangible results before the start of the new season. In 2023, the Seedlings Growers Association of South Africa (SGASA) introduced mandatory MFC audits of nurseries and their corresponding mother blocks with support from SAMAC. SAMAC is currently carrying the cost of these inspections in an effort to curb the spread of the MFC to other growing regions.