



ARC-TROPICAL AND SUBTROPICAL CROPS



NEWSLETTER

April - June 2016
Issue No. 1

Dear
Colleagues !

WE have decided to initiate an ARC-TSC newsletter highlighting various activities the ARC-TSC campus is involved in.

We aim to produce a quarterly newsletter which we want to pitch somewhere between the



old Neltropika and Pitte en Skille/Pips and Peels for those who can remember. The focus should be on research-related activities. Please feel free to forward to Karin Hannweg or Elliosha Hajari anything you'd like to see appearing in the newsletter – we'd like to use it as a marketing tool for the diverse activities we as a collective are involved in.

Much of the information will come from the quarterly reports but as you know not everything is included in these reports - and of course we'd like to brighten things up with some colourful photos!

In fact a picture says a thousand words so we hope to keep stories short and sweet ! **Thank you for all your contributions !**

We are also looking for a **FUNKY name** for the newsletter. Please submit your ideas by the **15th of October** to Karin or Elli – there will be a (very) small prize for the person coming up with the winning name! ■

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SPOTLIGHT

ON

NEW Staff members!

DR Elize Jooste was appointed as a Senior Researcher: Crop Protection. She transferred from ARC-PPRI where she was involved in research activities in the Virology division. Any viral disease on economically-important crops tomato, potato, legumes, tobacco, banana, grapevine and granadilla, interested her. Her research focus was on developing molecular diagnostic detection systems for new viral diseases, identification of variation in grapevine-infecting viruses, the study of virus-vector interactions by conducting mealybug transmission trials in grapevine viruses and monitoring the spread of diseases using trapping

methods and delimiting studies of virus spread. She accepted the challenge to become a pathologist in the Crop Protection division at ARC-TSC.

Her main duties at ARC-TSC are to manage the Citrus Improvement Program (CIP) and she is responsible for the Post Entry Quarantine (PEQ) function of ARC-TSC. All new citrus budwood importations are subjected to the shoot tip grafting (STG) process to certify that plant material is virus-, viroid- and disease-free. Another responsibility is the routine diagnostics on Avocado Sunblotch Viroid (ASBVd) for the industry. She is grateful for the well-trained staff in the Pathology division and believes that together they will contribute to the well-being of agriculture in South Africa and beyond its borders. She is looking forward to being involved in research on tropical and subtropical crops where diseases might have a negative impact. ■



**Dr Elize Jooste and her winning team:
Ms Bridget Zulu, Zama Theledi and
Thabile Sifundza**

Ms Lungile Linda was appointed as a research technician in the Entomology Section. She studied at the University of KwaZulu-Natal (Pietermaritzburg campus) where she obtained a degree in Biological Sciences. After graduating she worked as an intern at the South African Sugarcane Research Institute where she was involved in mass-rearing of insects for the biological control of *Eldana saccharina*, a serious pest of sugarcane. She is now applying this knowledge and expertise in the subtropical industry and is working with Dr Schalk Schoeman on the biological control of macadamia pests. ■



Improving our QUALIFICATIONS



Karin Hannweg, a Senior Researcher: Biotechnology, Plant Breeding, graduated with a PhD (Horticulture) from the University of KwaZulu-Natal (Pietermaritzburg campus). The ceremony was held on 19 April 2016 and her thesis entitled "**Induced Polyploidy as a tool for the development of novel South African indigenous crops**" resulted in the publication of several manuscripts in peer-reviewed Journals. ■



**Well done
Dr Hannweg !**

EXHIBITIONS, SYMPOSIA, WORKSHOPS, ANNUAL MEETINGS & RESEARCH DAYS

GCARD

SEVERAL colleagues represented the ARC-TSC campus on ARC-day at Roodeplaat: **Drs Hajari and Hannweg, Ms Rosemary du Preez and Karen de Jager as well as Mr Oscar Maphanga and Moses Molope.**

The exhibition formed part of the 3rd GCARD (Global Conference on Agricultural Research for Development) conference which was hosted by the ARC. The

Conference was created to promote effective, targeted investment and build partnership, capacities and mutual accountabilities at all levels of the agricultural system to ensure that agricultural research activities meet the needs of the resource-poor end user. Delegates from all over the world visited the exhibition to learn more about the ARC's activities. ■



NAMPO 2016

THE ARC was well-represented at NAMPO 2016. Visitors flocked to the exhibit to learn more about the ARC-TSC's activities and products. Over 75 000 visitors visited 685 exhibits at the NAMPO Harvest day, which is hosted near Bothaville in the Free State. Chairman of the NAMPO Harvest Day, Cobus van Coller, stated the following: *“Over the past half-century the NAMPO Harvest Day has evolved into a brand that accurately resonates modern agriculture in South Africa. It speaks to the general public as consumers of our agricultural products; it speaks to all producers in our country; it speaks to decision makers in government and the industry; it even appeals to the international arena and the growing interest from abroad confirms it.”*

Dr Tertia Grové, Ms Rosemary du Preez and Karen de Jager represented the ARC-TSC ! ■



INTERNATIONAL LITCHI SYMPOSIUM

THE 5th International Litchi Symposium which was held in India early in June 2016, was well-attended by delegates from all over the world who presented their research results.

Ms Regina Cronje not only presented her own research results but was also Chairperson/co-Chairperson of various sessions! She gained knowledge about sulphur-free post-harvest treatments

for litchi which may eventually impact positively on exports as well as various other orchard management practices which can benefit the SA litchi industry.

Future collaboration with Indian and Mauritian researchers regarding the exchange of litchi cultivars

and expertise on litchi orchard management practices can add to the SA litchi gene pool and improve current orchard management practices. This will create new research opportunities not only for litchi but for tropical and subtropical crops in general. The Symposium included a field visit which showcased cultivation practices in India. ■



WORKSHOPS

EASTERN CAPE TRAINING

A WORKSHOP was held with the Hluleka soap making co-operative and topics covered included marketing, branding and packaging. The co-operatives are making a variety of soaps and selling them locally. Agro-processing utilizing essential oils allows for niche marketing and the challenge is to ensure that production increases as demand for the products grows. ■



FRUIT TREE TRAINING

FRUIT tree crops and herbs are produced by farmers in the Eastern Cape. The farmers receive training on all aspects of crop cultivation as well as business skills, which will assist them in becoming self-reliant and sustainable. A total of 3200 fruit trees was delivered to village co-operatives and several training workshops were held. The continued support and assistance is critical to ensure that village organizations and co-operatives become self-reliant and sustainable. Herb cuttings were also provided to villages making soaps. These have been planted and will ensure an increase in production allowing more essential oils to be extracted locally and further capacitate their businesses. **Ms Rosemary du Preez** and her team have really made a significant impact in these communities ! ■



FRUIT FLY TRAINING

THE fruit fly team under the leadership of **Dr Tertia Grové** has hosted a number of fruit fly workshops for farmers in various District Municipalities in Mpumalanga and Limpopo. In April 2016, 137 farmers attended 3 training workshops on fruit flies that were held at Nkomazi and Nyongane in Mpumalanga. The staff at QMS Laboratories (5 people) in Letsitele in Limpopo also attended a workshop on fruit flies. Seven additional workshops were held in May for 284 farmers at Nkomazi, Bushbuckridge and Ikwezi Poultry Farm in Mpumalanga. A training workshop on water harvesting was held at Levubu in the Limpopo Province and attended by 67 farmers. ■



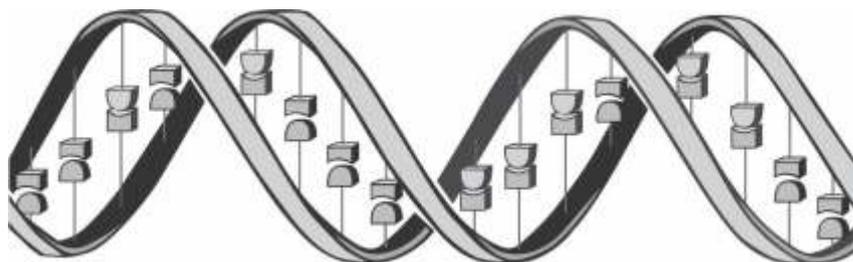
INTRODUCTORY PHYLOGENETICS

DR Eliosha Hajari and Ms Dzunisani Nonyane attended an Introductory Phylogenetics Workshop held in Pretoria from 10 – 13 May 2016. The workshop was hosted by Inqaba Biotechnical Industries to build capacity in the field of phylogenetics.

The four-day workshop was intensive as it included a mixture of presentations, exercises and discussions. An

advantage of the workshop was that all of the software used for analysis purposes was freely available without the payment of exorbitant licensing fees.

Participation in this workshop allowed for capacity development in a specialist field and provided a valuable networking opportunity to engage with local specialists. ■



FREE-LIVING NEMATODE WORKSHOP

FOUR research personnel from the Nematology section at ARC-TSC Nelspruit and Hluhluwe campuses (**Dr Mieke Daneel, Mr Willem Steyn, Mr Musa Mbatha, Ms Grace Tefu and Ms Rachel Mohlala**) attended the Free-living nematode workshop at the South African Sugarcane research Institute in Durban. The workshop was attended by scientists from different research institutions and laboratories including the ARC, NEMLAB, Stellenbosch University, North West University

and SASRI. The main purpose of the workshop was for the scientists to discuss the importance of free-living nematodes as bio-indicators of soil health, and to get to know the different genera occurring in South Africa and how to identify them. Free-living nematodes are beneficial to plant health because they play an important role in the decomposition process. It was such an interesting and eye opening workshop for everyone who works in the field with all those nematode species! ■



JOINT ANNUAL MEETINGS

DRS Mieke Daneel and Mbokota Candy Khosa presented papers at the joint meeting of the 55th Annual Society of Nematologists and the 48th Annual meeting of the Organization of Nematologists of Tropical America in Montréal, Canada. Dr Khosa presented a paper on the phytochemical investigation of non-crop plant species on motility and egg-hatch inhibition of *Meloidogyne incognita* race 2. This work formed part of a collaborative study between the ARC-TSC and the CSIR. Outcomes from this study will also be published in a chapter of a book entitled Nematology in South Africa: A view from the 21st Century, later in 2016.

During the visit, opportunities for research collaboration were identified with scientists from the University of Florida, Institut für Pflanzenkrankheiten in Germany and the Institut National de la Recherche Scientifique Centre Institut Armand-Frappier in Canada. Delegates at the conference raised concerns

regarding smallholder communities that are faced with nematode problems. This will be addressed locally via a series of workshops and meetings with relevant stakeholders. ■



SAMGA RESEARCH DAY

ON 15 June 2016 the annual Research Day held at Maholoholo, Ya-Mati showcased the latest research developments to the industry.

Dr Tertia Grové presented two papers: firstly, a presentation on the vapour heat treatment of mangoes, where she stressed the importance of phytosanitary measures that can be used on mangoes to mitigate pest risk in export commodities, as well as the facilities needed for such a treatment. Her second presentation addressed the issue of the relative abundance of oriental fruit fly in the Mpumalanga province. She elaborated on the training being given in the areas, and creating awareness about trapping fruit flies together with orchard and yard sanitation.



Face of a male
Bactrocera dorsalis
fruit fly

Photo credit: Riaan de Jager



Face of a male
Ceratitis capitata
fruit fly

Photo credit: Riaan de Jager

While it may look beautiful close-up, the Oriental fruit fly (*B. dorsalis*) has important implications for fruit exports. ■

OTHER HIGHLIGHTS

FRUIT FLY DNA EXTRACTED

DNA was successfully extracted from fruit fly (*Ceratitis rosa*). Good quality DNA was obtained with high yields. This is a promising development as it broadens the scope of ARC-TSC research and will potentially allow the Molecular Genotyping Lab to explore genetic relationships in insects as well as plants. Future work by **Dr Elliosha Hajari and Ms Dzuni Nonyane** will investigate the feasibility of this by testing commercially available molecular markers. ■



Mr Christo Human delivered a presentation on the evaluation of promising new mango cultivars in different climatic areas. He touched on the objectives of the breeding programme, as well as the layout of the different trials all over the country. Promising new cultivars were discussed and illustrated through photos and fruit characteristics. 'Crimson Pride' is but one of the exciting new cultivars from the breeding programme. ■



ORIENTAL FRUIT FLY IN BUSHBUCKRIDGE & NKOMAZI

THE Oriental fruit fly, *Bactrocera dorsalis* (Hendel), is a destructive pest of fruit and vegetables globally. This pest was first reported in South Africa in 2010 in Limpopo and in Mpumalanga in 2012. In many African countries, the Oriental fruit fly is the dominant fruit fly pest species attacking cultivated fruit crops resulting in significant damage. Furthermore, their presence affects the trade of fresh commodities in many African countries. The ARC-TSC and the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) are currently working together to combat the fruit fly problem in the Bushbuckridge and Nkomazi municipalities in Mpumalanga by monitoring the fruit fly species present, their abundance and tracking changes in population levels. Through stakeholder collaboration, they will develop a management package that is economically-viable, environmentally-sensitive and sustainable. ■



4500 *B. dorsalis*
fruit flies were caught
in this trap !!

BIO-CONTROL OF NEMATODES

NEMATODES cause a substantial loss in yield and quality of crops. Currently, **Dr Khosa** is investigating the use of bio-nematicides extracted from a number of indigenous plant species to determine their effectivity as bio-control agents of nematodes. The goal is to develop nematicidal product/s from plants tested with the aim of assisting smallholder communities and commercial farmers to manage the plant parasitic nematodes, in particular the root-knot nematode (*Meloidogyne* species) race 2. The project involves collaboration with researchers from the CSIR, University of Kwa-Zulu Natal, North-West University, Tshwane University of Technology and the University of Leuven in Belgium. A number of post-graduate students will also be trained during the project. ■



WILD GINGER

SIPHONCHILUS *aethiopicus* (wild ginger) is one of only several thousand plant species used in traditional medicinal preparations in South Africa. The plant is threatened with extinction and is already extinct in the wild in the KwaZulu-Natal Province and is increasingly threatened in the Mpumalanga Province where small populations of this plant species are reported to exist.

Collaboration between **Dr Karin Hannweg** and SANParks scientists will ensure that communities neighbouring the Kruger National Park will obtain the necessary skills and expertise in order to propagate their own plants. ■





Polyploid wild ginger selections were developed and propagated in tissue-culture. The new selections are much bigger than the control plants and are now being evaluated for various horticultural characteristics

THANK YOU for all those who contributed to
this **FIRST ISSUE** of the
ARC-Tropical and Subtropical Crops's
NEWSLETTER

REMINDER: Submit your name ideas
on or before
15 OCTOBER 2016.



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