



# FRUITOPIA NEWSLETTER

ARC-Tropical and Subtropical Crops



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## ARC-TSC HOSTS FIRST ANNUAL POST-GRADUATE RESEARCH DAY

The first ever ARC-TSC Research Day for Post-graduate Students was held from 2-3 November 2021 at the ARC-TSC Campus. The theme of the Research Open Day was **ARC-TSC Research in Action: Young Minds Addressing the Sustainable Development Goals (SDGs)**. The Research Day provided a platform for researchers and post-graduate students at the ARC-TSC to communicate research findings and the various means through which they seek to actualise the SDGs.

The day kicked off with opening remarks from the Senior Manager Research ARC-TSC, Dr Yolisa Pakela-Jezile, and this was followed by a talk on Intellectual Property delivered by Dr Cynthia Motsi and her team. Keynote addresses were delivered by invited speakers including Prof. Funso Kutu (University of Mpumalanga), Prof. Jones Ngambi (University of Limpopo) and Dr Candy Khosa (ARC-TSC). The Research Open day was divided into four plenary sessions all dedicated to the



*The best oral presentation award (Ph.D category) went to Ms Sinethemba Ximba*



*The best oral presentation award (MSc. category) went to Ms Lungile Linda*

Sustainable Development Goals of: SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). Presentations at each plenary session were aligned with the five research divisions of the ARC-TSC: Crop Protection; Horticulture and Rural Development; Plant Improvement; Soil Science; and Agro-Processing and Post-harvest Technologies.

The Research Open Day was held as a hybrid event with a total of 25 oral presentations. The awards for the Best Oral Presentation in the Ph.D category went to Ms Sinethemba Ximba, an ARC-TSC Professional Development Programme student who presented on **Monitoring the distribution of banana bunchy top virus in South Africa: a country-wide survey**. The award for the Best Oral Presentation in the MSc. category went to Ms Lungile Linda of the ARC-TSC and a recent MSc. graduate from the North-West University, who presented on **The control of *Bathycoelia distincta* (Hemiptera: Pentatomidae) with indigenous *Beauveria bassiana* isolates, under laboratory and semi-field conditions**.



*Presenters, organisers, students and staff members were all in attendance at the ARC-TSC first annual Research Day*

## ANNUAL SALGA RESEARCH SYMPOSIUM

Researchers from the ARC-TSC presented their most recent research findings at the annual SALGA Research Symposium which was held on 21 October 2021. This was a hybrid event with in-person presentations at the ARC-TSC's Nelspruit campus and other participants joined virtually.



*Dr Karin Hannweg, Mrs Andani Mmboyi and Mrs Regina Cronje*

Dr Karin Hannweg, together with co-workers, Mr Oscar Maphanga, Ms Ziyanda Shezi, Mr Mark Penter and Dr Elliosha Hajari, presented the latest results of their research towards early detection of scion-rootstock incompatibility in litchi. Mrs Regina Cronje presented her findings with regards to a new study that reveals ethephon's role in regulating dormancy and flowering in litchi where she worked closely with Dr Elliosha Hajari, Ms Innocent Ratlapane and Mr Arnold Jonker. Mrs Andani Mmboyi and Mr Arthur Sippel also provided feedback to stakeholders on the outcomes from the litchi cultivar evaluation during the 2020/21 season.

# ARC-TSC CONTRIBUTES TOWARDS THE MASIA VILLAGE WATER-ENERGY-FOOD NEXUS PROJECT

Staff from the ARC-TSC farmer support, training and commercialisation (Dr Yolisa-Pakela Jezile, Dr Candy Khosa and Mr Oscar Maphanga) were invited to be a part of the Masia Village Water-Energy-Food nexus project. This project is funded by the Department of Science and Innovation and other partners include Stellenbosch University, North-West University-Hydrogen SA, Bambili Advisory Services, SANEDI and the Masia Tribal Authority at the Masia Community Centre Development Project. The goal of this project is to establish an innovation centre at the Masia traditional authority that will assist the community with food, water and energy production through the application of sustainable agricultural solutions. The intention is to promote an agricultural intensive community in order to address the food security concerns in Masia villages and to deploy renewable energy and climate-smart agriculture innovations along the value-chain. This will include the establishment of appropriate nurseries for vegetables, tree crops, sweet potato and essential oils, suitable store rooms, a borehole, water tanks, installation of irrigation systems, a complete agro-processing facility, a solar drying facility, a sales and distribution area and the provision of manuals for financial management, occupational health and safety, business, marketing plans, etc. Relevant training related to production practices, pest and disease management, etc. will also be provided. The impact of the implemented actions will contribute towards increased food security, reduced post-harvest losses and food waste; improved shelf-life and diversity of food products; and improved income and livelihoods.



*Masia Village Water-Energy-Food nexus project underway*



*Transplanting of the variegated Eureka lemon tree (developed by the ARC-TSC Nursery) by Deputy Minister DSI, Honourable Buti Kgwaridi Manamela (left) and Honourable Thovhele M.N.J. Masia (right) (photos by Dr M.C. Khosa)*

## ESSENTIAL OIL DISTILLATION UNITS INSTALLED AT TWO ARC-TSC RESEARCH STATIONS

The ARC is part of an essential oil project funded by the DSI and this involved the installation of two essential oil distillation units at the Addo research farm and at the ARC-TSC in Mbombela. Field trials are being carried out on these farms and the new units will be used for the distillation of essential oils from the material grown. The units are 100 kg off grid units designed to be utilised in rural areas with wood for heat generation and solar powered cooling units. Both units are functioning well and initial extractions of essential oils have been done.



*Initial test distillation of lemon grass at Mbombela*

Once trials are completed, the units will be used in ongoing research programs, with a particular focus on opportunities for rural development.



*Addo distillation unit - decanting oil*

# PROMISING MANGO SELECTIONS EXHIBITION

The annual Hoedspruit exhibition for promising mango selections from the ARC-TSC mango breeding program was held at Mohlatsi Farm. Twenty four mango selections/cultivars, consisting of 16 promising selections from the ARC-TSC mango breeding program and eight selections from the industry, were exhibited. Mango producers and SAMGA (South African Mango Growers Association) industry members participated in the sensory evaluation. Exhibitions where sensory evaluation data is collected assists in the selection process as the breeding program consists of a large number of promising genotypes. The sensory data from Hoedspruit, Malalane, Tzaneen and Clanwilliam exhibitions will be compared and the most popular selections will be considered to be registered for Plant Breeder's Rights. At present, four selections are in the process of being registered.

Ms. Phumelele Ngwenya, an MSc. student, joined the mango breeding team late in 2021 and we welcome her on this journey to a bright mango future!



*Mango industry members participating in sensory evaluations*

## EASTERN CAPE VISIT

Researchers from the ARC-TSC (Ms Karen de Jager and Ms Rosemary du Preez) recently visited the Eastern Cape as part of ongoing projects to monitor indigenous fruit trees in the wild and to assess selected villages that were part of the Integrated Village Renewal Programme (IVRP) initiative. The IVRP is focused on introducing high value crops using conservation agriculture (CA) principles to address food security and smallholder farmer challenges. Major objectives include organisational development and skills transfer, food security, enhanced food production and income generation through increased commercial production and development of agro-processing businesses.



*Engagements with villagers in Bodweni*

Kei apple trees in the Ndimakude and Mqanduli area that had been previously identified were evaluated and fruit were collected for analysis. Additional trees were identified in the Ngceni area of the King Sabata Dalindyebo municipality. This forms part of the indigenous fruit development initiative to select trees with good quality fruit with potential for further development.

The Bodweni, Xurana, Noqhek-wana, Hluleka, Nkanunu and Bulungula villages were visited

for assessment of agro-processing and production capacity. The plantings were all in good condition and citrus trees currently have good yields. All of the villages reported poor mango yields during the past season. Villagers in Bodweni, Noqhek-wana and Nkanunu produce jams and market them locally, mainly to guesthouses and local tourism outlets. The community in Xurana, Hluleka and Bulungula all produce soaps and people in Bulungula also make candles utilising essential oils.

Farmers in the villages are doing well, despite some challenges. These include difficulty in accessing additional quality trees to expand plantings, access to necessary inputs for control of pests and diseases and access to formal markets due to lack of infrastructure.



*Bulungula villagers produce soaps and candles utilising essential oils*

Villagers involved in agro-processing endeavours also experience challenges in accessing materials required and the ability to access key markets for processed products are restricted due to difficulties in meeting health and safety requirements.

The farmers were very positive about the impact of the programme to date but also indicated that additional support would assist them to expand production and grow agro-processing businesses.

## DELEGATES FROM TURKEY VISIT THE ARC-TSC

The ARC-TSC hosted a group of delegates from Turkey, who had an interest in avocado and banana farming and research. The delegates were keen to find out information on production in South Africa, as well as technologies used for greenhouses, fertiliser use and soil science. The two-day programme included visits to both the Nelspruit and Burgershall farms in Mpumalanga.

The first part of the tour took place at the Nelspruit farm, where Mr Arthur Sippel, Dr Elliosha Hajari and Dr Elize Jooste led the tour, showcasing and presenting their respective divisions and lab spaces with regards to plant improvement, tissue culture, biotechnology and the impact of viral diseases on avocado and banana. The delegates were also welcomed in the bookstore by Ms Estelle Nieuwenhuis, where they purchased various books on tropical and subtropical crops. The second part of the program involved a visit to the Burgershall Farm, where Mr Arthur Sippel, Dr Grace Tefu and Mr John Mthethwa provided an overview of banana and avocado farming. This included a visit to the orchards and a presentation on nematodes. The group continued their visit to numerous commercial avocado and banana pack house facilities in the Kiepersol area.

The group expressed their appreciation and gratitude to the ARC-TSC for a productive and informative visit.



*Turkey delegates visit the ARC-TSC*

## YEAR END VISIT TO BURGERSHALL FARM

To end the year, Dr Yolisa Pakela-Jezile (ARC-TSC SMR) and Mr Andries Nkuna (ARC-TSC Facilities Manager) visited the Burgershall Research Station. The day involved a tour around the farm and a small luncheon with all staff members who expressed their gratitude for the visit.



*Visit to Burgershall Farm*

## VALENTINE'S DAY CELEBRATIONS



In the spirit of celebrating Valentine's Day on the 14<sup>th</sup> of February, the ARC-TSC took the opportunity to show appreciation for employees by hosting a day of fun-filled activities. This included a Valentine's Day themed photo booth as well as raffle tickets (along with a small gift) which allowed for entry into a special draw where everyone stood the chance to win a Valentine's Day gift hamper.

After much anticipation, three employees namely, Mr. Jabu Ngomane, Mrs. Nhlanhla Mashigo and Mr. Elphas Thabethe walked away with the prizes. Congratulations to the winners, we hope it made the day extra special!

*From left to right: Ms Tshimangadzo Malindi, Ms Forgiveness Mabuza, Ms Lerato Lekhuleni and Ms Patricia Komane*



*Colleagues enjoying the day*

## STAFF NEWS

### GRADUATIONS



*Dr Phindile Faith Ndlovu*

Congratulations to **Dr Phindile Faith Ndlovu** for the achievement of her Ph.D in Horticultural Science through the University of KwaZulu-Natal under the supervision of Prof. LS Magwaza, Prof. SZ Tesfay (University of KwaZulu-Natal) and Dr RR Mphahlele (ARC-TSC).

Her research work focused on the **“Rapid monitoring and quantification of unripe banana flour adulteration using visible-near infrared spectroscopy”**.



*Ms Kayise Maseko*

Congratulations to **Ms Kayise Maseko** who has graduated with an MSc. degree in Food Science from the Tshwane University of Technology. The title of

Ms Maseko’s Masters dissertation was: **“Screening the functional properties of unripe banana flour from 35 varieties based on their genomic and sub-genomic groups,”** for which she obtained a Distinction.

**May she enjoy the fruits of her hard work!**

## APPOINTMENTS

**Mr Jerry Mhlongo** has been promoted to Farm Supervisor for the Friedenheim Farm from December 2021. Previously, Mr Mhlongo was stationed at the Nelspruit Farm where he was appointed as a Farm Assistant in 2011 and as an Artisan Assistant in 2016.

We congratulate him on his rewarding and fruitful career at the ARC. Well done Mr Mhlongo.



*Mr Jerry Mhlongo*

## RETIREMENTS

Congratulations to our colleagues, **Mr Christo Human**, **Mr F F Sikhonza**, **Mr T R Mathisa**, **Mr M E Sambo** and **Ms T N Shakwane** on their retirement.

After climbing the mountain, you finally can enjoy the view.



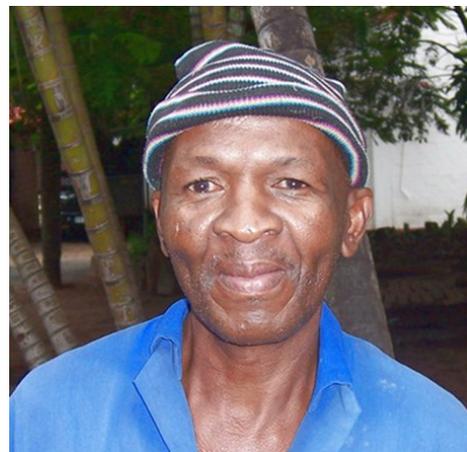
*Mr Christo Human*



*Mr F F Sikhonza*



*Ms T N Shakwane*



*Mr M E Sambo*



