

Sustainable agriculture for the future

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**T**he Agricultural Research Council (ARC) participated in the DSI's National Science Week 2021 (NSW 2021), which is held annually in August to celebrate and create awareness on the role and value that science and technology contributes to people's daily lives, and that has national coverage.

Keeping up with the practice of recognizing the United Nations (UN) international observances, the NSW 2021 incorporated activities to celebrate the UN's International Year of Fruits and Vegetables (IYFV) 2021. Attention was given to local discoveries and innovations in plant production or sciences.

A number of women researchers from various campuses in the Crop Sciences and Animal Sciences Divisions made the ARC proud by participating in the NSW during which they shared their knowledge and expertise with learners, scientists and the public.

**Dr Zeldá Bijzet** obtained her BSc Agric (Genetics and Plant Breeding) in 1990, BSc Agric (Hons) in 1991, and MSc Agric (Horticulture) in 2002 at the University of Pretoria and a PhD in Plant Breeding from the University of the Free State in 2014. Her PhD thesis titled 'Rootstock-scion genotype and environment interaction in a South African citrus breeding programme' was the first comprehensive study on rootstock-scion interactions in commercial citrus breeding using statistical models such as the Additive Main Effects and Multiplicative Interaction (AMMI) and the Genotype main effects and Genotype × Environment Interaction (GGE). Dr Bijzet is currently the Research Team Manager of Crop Development at the ARC-Infruitec/Nietvoorbij that focuses on the development of Fynbos, fruit crops and beverage crops.



**Dr Cecilia Bester** has a PhD in Genetics, with more than 30 years of experience in the breeding of various crops, e.g. vegetables, forestry trees, deciduous fruit and indigenous Fynbos, which includes the use of diverse breeding techniques and tools. For the past 10 years, Dr Bester has focussed her research on honeybush, which has made a significant contribution to the honeybush industry, as well as to community development.



**Dr Sunette Laurie** is managing the sweet potato breeding and technology transfer programme of the Agricultural Research Council-Vegetable, Industrial and Medicinal Plants (ARC-VIMP). The programme supports both the commercial and informal sectors by supplying them with healthy planting material and improved cultivars. Agronomic, crop protection and agro-processing research also supports these sectors. The Southern African Plant Breeders Association chose Dr Laurie as one of Africa's 20 most influential plant breeders in 2020. She has worked as a sweet potato breeder since 1994 and has released 20 sweet potato varieties, with nine being cream-fleshed and 11 being orange-fleshed.

**Dr Inge Gazendam** graduated from the University of Pretoria in 2012 with a PhD in Plant Biotechnology. Her research resulted in the identification of various cowpea genes responding to drought stress. During her time at the ARC, she has applied a variety of molecular biology, genomics, viromics, virus diagnostics and molecular marker tools to mandated vegetable crops and indigenous flower species. She has also performed plant transformation to improve the drought and virus tolerance of crops.



**Ms Prudence Mtsweni** has obtained her National Diploma in Biotechnology (2014) and her Bachelor Technologiae degree in Biotechnology (2016) from the Tshwane University of Technology. She recently completed her Magister Technologiae degree in Biotechnology at the same institution, which focused on the post-harvest diseases of subtropical fruits. Currently, she is employed at the ARC as a Research Technician in the Biological Nitrogen Fixation Unit of the ARC-Plant Health and Protection (ARC-PHP) campus



**Dr Mary-Jane Thaela-Chimuka** is a Senior Researcher in the ARC. She obtained her MSc in Animal Science, with distinction, from the University of Warsaw, Poland, the research of which focussed on the effect of melatonin dosage on the diurnal rhythm of immunity in chicken. She holds a PhD in Animal Science from Lund University, Sweden. She completed her postdoctoral research studies at the Danish Institute of Agricultural Sciences, Denmark. She is a founder of an aquaculture unit at the animal production campus of the ARC, which she is also managing.

**Dr Salmina Mokgehle** received her PhD in Horticulture from the University of KwaZulu-Natal. Dr Mokgehle is a researcher and project leader on medicinal plants and indigenous leafy vegetables at the ARC-VIMP. Her research focuses on the cultivation of medicinal plants and indigenous leafy vegetables, as well as on product development.





**Dr Nadia Araya** obtained her MSc and PhD degrees in Agronomy from the University of Pretoria, which focussed on water management for dryland and irrigated crop production. Dr Araya's research focus is on climate-smart agricultural practices, including protected soilless crop production systems, for improved crop productivity under the adverse effects of climate change. She is working as a researcher in the Crop Science Division at the ARC-VIMP.

**Erika van den Heever** is a Senior Researcher at the ARC-VIMP. Her focus is on vegetables and technology transfer. She holds an MSc Agric from the University of Free State, Bloemfontein. She leads a group of researchers and facilitators who are responsible for providing accredited training in vegetable production. The training is aimed at providing smallholder farmers and gardeners with the knowledge needed to increase vegetable production, leading to improved food and nutrition security.



**Dr Julia Mulabisana** is a researcher in the plant virology focus group of the ARC-VIMP. She is currently involved in potato, sweet potato, and Swiss chard virus research. She is also involved in the diagnostics of viruses infecting other vegetables, such as cucurbits, tomato, pepper, garlic, etc. Her work further entails field assessments to determine the prevalence of vegetable viruses.

**Dr Mariette Truter** has been actively involved in various aspects of plant health research since her appointment at the ARC in 2006. She obtained her PhD in Plant Pathology from the University of Pretoria in 2010. Dr Truter specialises in the characterisation of fungal plant diseases on various agricultural crops, such as potato, sweet potato, amaranth, tobacco, essential oil plants and medicinal plants.



**Dr Rene Sutherland** has obtained her BSc in Microbiology and Plant Pathology, BSc (Hons) in Plant Pathology (cum laude), MSc in Plant Pathology (cum laude), and PhD from the University of Pretoria. The title of her PhD thesis was 'The effect of cold stress on the resistance of Cavendish bananas to Fusarium wilt'. Dr Sutherland is the manager of the Diagnostic Clinic (DC), which serves all vegetable growers in South Africa. The DC investigates all plant diseases affecting growers (commercial, small scale and emerging), and offers them control measures in order to manage plant diseases, thus improving crop production.

**Dr Rosemary du Preez** is responsible for community and rural development agricultural projects, and the development of new and alternative crops, including essential oil, spice and medicinal plants, as well as indigenous and exotic fruits, especially for resource-poor farmers. This includes product development. She joined the ARC-Tropical and Subtropical Crops (ARC-TSC) as a researcher in Nelspruit in 1982.





**Dr Karin Hannweg's** research focusses on plant improvement in the tropical, subtropical, and indigenous plant conservation environment, and together with her broad-based undergraduate and post-graduate training, she has a wide range of knowledge across a range of disciplines. These include biotechnology, horticulture, breeding, entomology, pathology, plant physiology, post-harvest physiology, and to a lesser extent, soil science. She joined the ARC-TSC in 1996.

**Dr Elize Jooste** obtained her PhD from the University of Stellenbosch. She is currently involved in industry-funded research on avocado, banana and citrus pathogens. She contributed to projects that improve food security in poorer communities that grow banana as a staple food and for income generation. Dr Jooste is the Research Team Manager for the Crop Protection Division at the ARC-TSC, dealing with research on the pests and diseases of tropical and subtropical fruit.



**Ms Phomolo Maphothoma** is a Junior Researcher at the ARC-VIMP. Her focus areas are on the propagation, cultivation and agro-processing of medicinal plants. She obtained her MSc in Agriculture from UNISA, which focused on the effect of fertilizer application on rhizome size in African ginger. She is currently furthering her studies on medicinal plants research. She is also involved in the training of rural communities on medicinal plant propagation.

**For more information:**

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