

HANNES DE LANGE

Why he received a CRI Technical Merit Award

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The SA citrus industry today is unrecognizable from the industry that existed 30 years ago. Not only have there been great advances made in market access, containerization, traceability and packing, but behind it all lies a highly productive range of cultivars and rootstocks derived from nursery trees produced from horticulturally selected pathogen free propagation material and planted in areas suitable for optimal production. Today citrus is returning to areas previously abandoned by growers because of the devastating effects of Greening and other transmissible diseases.

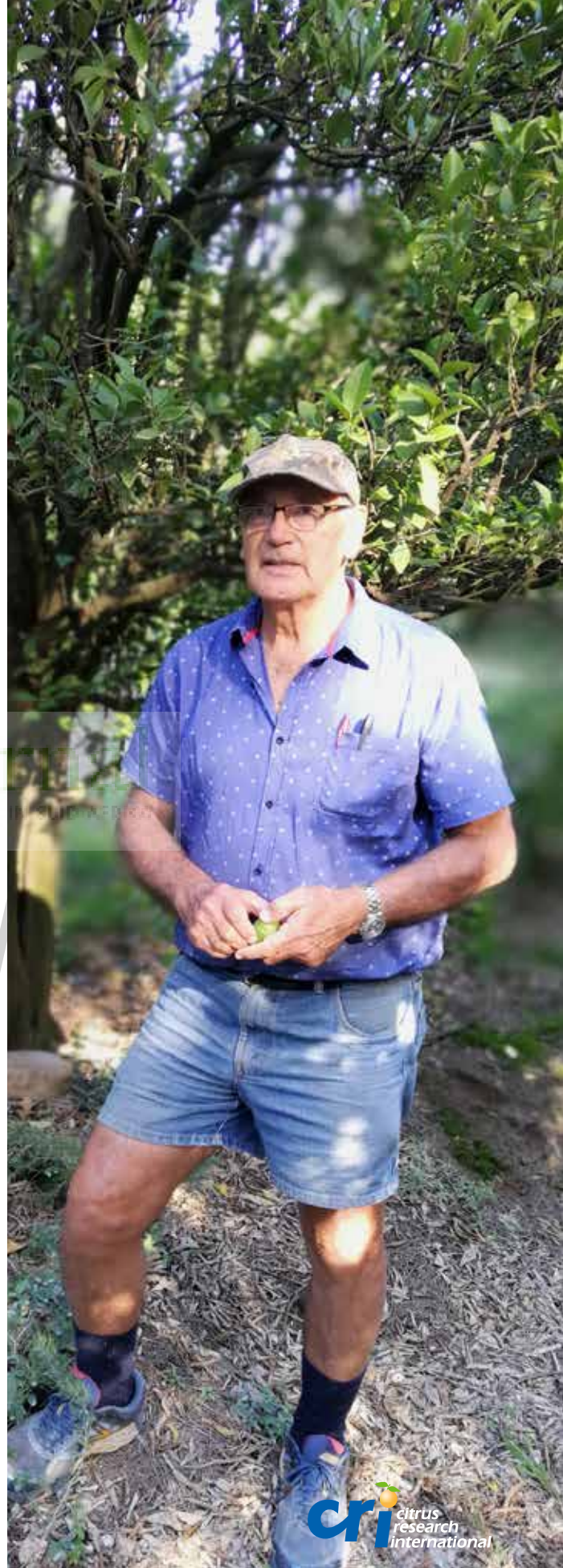
This is a long story which one day needs to be told. But at the heart of it lies the contribution made by individual scientists, administrators, nurserymen and growers who need to be recognized for their unique contributions to the industry as we know it today. One of those individuals is Johannes (Hannes) de Lange.

Hannes obtained his MSc. in plant physiology from the University of Pretoria in 1969 for his work on endogenous hormones in citrus. Thereafter he was attached to the Citrus and Subtropical Fruit Research Institute in Nelspruit where his research on the pollination requirements of citrus cultivars led to him being awarded his DSc in 1972.

During that period he also conducted pioneering research on the breeding of easy peeler citrus types and traveled to Corsica, Spain, Israel, California and Florida with a view to importing some of the promising new cultivars being bred in those regions. He also visited a number of European markets. He negotiated the importation of the Miho Wase Satsuma from Japan and spent six months conducting research at the Division of Fruit Breeding at the Volcani Institute in Tel Aviv, Israel.

He bred the Valley Gold (B17) mandarin which is being planted in various citrus areas of SA to this day. Over 100 000 buds of this cultivar have been supplied by the Citrus Foundation Block annually over the past three years. It was early in the 1970s that the revolutionary technique of shoot-tip grafting (STG) was being developed at the Riverside campus of the University of California by Murashige, Navarro and Roistacher. This ground-breaking new

Dr Hannes de Lange in front of the Valley Gold (B17) mother tree.



Effect of Phosphonate Applications, for *Phytophthora* Brown Rot Control, on 'Nadorcott' Mandarin External Fruit Quality

Phosphonate foliar applications in the period prior to harvest are used in citrus production for the control of *Phytophthora* brown rot control. Several grower reports indicated that these applications caused phytotoxic damage on 'Nadorcott' mandarin fruit. Trials were conducted over two seasons (2016 and 2017) in two climatically different citrus production areas of South Africa. These trials consisted of ammonium and potassium phosphite foliar applications (at full dose or half dose) at green, colour break or full colour stages of fruit development. Results indicated that, regardless of the type of phosphonate or dosage applied, phytotoxic damage was observed at harvest if foliar applications were done at colour break or full colour stage of fruit development. The same results were observed in the different climatic areas. It is recommended that skirt pruning or foliar applications of registered contact fungicides be used to mitigate *Phytophthora* brown rot on 'Nadorcott' mandarin fruit.

Introduction

In South Africa, brown rot of fruit is primarily caused by *Phytophthora nicotianae* or *P. citrophthora* (Meitz-Hopkins et al., 2013). It is a disease that can severely reduce yield and/or fruit quality in the orchard or in the postharvest cold chain (Adaskaveg et al., 2015; Montenegro et al., 2008). The disease is especially severe in areas where rainfall occurs during the late stages of fruit development and maturation (Adaskaveg et al., 2015). Properly timed foliar applications with phosphonates have been shown to be an excellent preventative control measure for brown rot of citrus fruit as well as root rot caused by *Phytophthora* sp. (Graham, 2011).

However, an increasing number of reports were made by growers in cooler, winter rainfall, production areas of South Africa that they have experienced phytotoxic damage to mandarin fruit when they applied phosphonates at late fruit developmental stages when colour development was advanced. As these were the first reports of such damage on mandarin fruit, further investigation was warranted.

MATERIALS AND METHODS

Cultivar and trial sites

'Nadorcott' mandarin was used as all reports of phosphonate phytotoxic damage occurred on fruit of this cultivar. Different trial

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technology enabled citrus propagation material to be freed of viruses and other pathogens, thus opening the door to the use and importation of a wide range of highly productive disease-free cultivars and rootstocks.

The steps leading to Hannes's involvement in South Africa's soon-to-be named Citrus Improvement Programme were chronicled by Chet Roistacher when he came to South Africa to receive his Honorary Doctorate in 1999. He reminded those present that at the 6th International Conference of Citrus Virologists which South Africa hosted in 1972, our scientists were informed about the new STG technique being developed in California. Following a visit to California by Louis von Broembsen to view the technique in 1974, Hannes de Lange was appointed to take on the project of introducing it to South Africa.

He did this with resounding success and was awarded the Transvaal Agriculture Researcher of the Year prize in 1982 for his contribution. Hannes's remarkable achievement in painstakingly commercializing the delicate STG process has had a huge and lasting impact on the ongoing success of the SA citrus industry. In 1986 Hannes, being the true researcher he always was, moved on to the National Botanical Institute at Kirstenbosch where he established the tissue culture unit used for the preservation of endangered plant species.

Thereafter Hannes conducted an extensive study of threatened fynbos species and in 1992 was awarded a PhD by the University of Stellenbosch for his work on the embryology and ecology of these endangered species. This research has had worldwide recognition for, amongst others, unraveling the role of chemicals in veld fire smoke that aid seed germination.

Hannes initiated research into the production of Honeybush which led in 1999 to the establishment of the SA Honeybush Association. He was presented with four awards for his outstanding research contribution during this period.

Since his official retirement in 1999, Hannes has conducted contract research for different local and overseas entities to develop various selected South African plant species for pharmaceutical and other purposes. He is currently entering into a long-term project with the Rooibos industry for the genetic improvement of their propagation material.

Hannes has, throughout his career, shown himself to be a professional researcher in every sense. Dedicated, focused, yet disarmingly modest, he was always aware of the significance of the challenges we face and he has pursued his work with passion and intensity. His contribution to the citrus industry is immense and appreciated.