



◀ South African scientist Olaniyi Fawole.
[Photo provided]

TURNING LOSS INTO A NUTRITIONAL GAIN

✍ by Cristina Serra

Olaniyi Fawole from South Africa investigates strategies to extract valuable biological compounds from sun-damaged pomegranates.

They're beautiful to look at and have an appealing sweet-sour flavour, and now pomegranates are catching the interest of scientists because they contain more than 120 bioactive compounds good for human health.

South Africa is investing in pomegranate cultivation despite a significant risk: severe sunburn inflicted by the strong South African sun, which spoils about 30% of the annual harvest. Because these damaged fruits cannot be eaten, juiced

or used for other purposes, they are usually thrown away.

Olaniyi Fawole from Stellenbosch University in South Africa has been studying pomegranates' properties for several years. He found that even sunburned fruits contain substances with potential medical and nutritional applications, and now his goal is to find a way to extract high-quality bioactive substances from the damaged pomegranates.

"Pomegranates are an important resource for South Africa, and when I realized that there were few studies on their biological properties, I felt I needed to fill this gap," Fawole explained at the TWAS General Meeting in Kigali.

Fawole, elected as a TWAS Young Affiliate in 2016, earned a bachelor's degree at Obafemi Awolowo University in Nigeria and a master's at the

University of KwaZulu-Natal in South Africa. He completed his PhD work from 2010–2013 at Stellenbosch University, where he is now a researcher in the South African Research Chair in Postharvest Technology, Department of Horticultural Sciences. He is also a founding member of the recently established TWAS Young Affiliate Network, TYAN [see pg. 30–31].

Pomegranates, he explained, contain antioxidant, anti-diabetic and anti-microbial compounds. They also find applications as animal feed, as natural dye and for nutraceuticals and pharmaceuticals.

All these properties prompted Fawole to determine optimum fruit maturity and postharvest handling protocols in order to help maintain quality and reduce losses during postharvest handling.

Sunburn bleaches the red colour of pomegranate arils (the inner red seeds), making the fruit undesirable for processing into other products; in addition, the disposal of unsold fruit stresses the environment.

Fawole chose a popular South African cultivar called 'Wonderful'. He extracted oils from sunburned as well as from healthy fruits, and identified new biological properties.

"I was glad to see that sunburned fruits were still potentially useful for their antibacterial activity against bacteria such as *Klebsiella pneumoniae* and *Escherichia coli*," he said.

As a next step, he wants to optimise the processing technique and patent his results, then launch a spin-off company to exploit this unexpected resource. ■

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