WHEN IS THE BEST TIME to pick ‘Triumph’ persimmons, marketed as Sharon Fruit, in order to maximise export potential? Should the fruit on the tree be light yellow or deep orange? How does the fruit respond to storage at different levels of maturity?

Knowing the answers to these questions is important in ensuring Sharon Fruit from South Africa reach their destination markets in the best possible condition. But, given that persimmons have been cultivated locally for less than two decades, there is much we don’t know about them yet. One such unknown is the post-harvest quality of the fruit.

Given the great distances involved in the export industry, it is imperative that the fruit be stored and packaged under optimum conditions. At the moment, the fruit is often spoilt when it arrives at its export destination. Incorrect storage and handling practices result in excessive water loss, a decrease of total soluble solids (TSS) – which is an indication of sugars present in the fruit – loss of vitamin C and a decrease in firmness. When spoils occur, the fruit has to be repackaged at the export destination – with the farmer in South Africa responsible for the cost.

Such losses and their financial and reputational impacts gave rise to a study into the maturity development, storage and shelf life of persimmons. The research project was a collaboration between the Sharon Growers Group and the Department of Horticultural Science at Stellenbosch University (SU). The SU project leader was Dr Elke Crouch who, together with Dr Wiehann Steyn, supervised the Master’s student, Pesanai Zanamwe, who did the research. The project coordinator was Ferdie Ungerer, a former technical manager of the Sharon Growers Group.

PICK YOUR PICKING TIME

Mr Ungerer explains that the harvesting season of Sharon Fruit stretches from the first week of April in the earlier regions to the first week of June in the late regions. Two parameters determine maturity, namely colour and firmness of the fruit.

The research project entailed three trials over a three-year period during which Cultar-treated and untreated fruit were harvested from both early and late orchards. Cultar is an agrochemical that controls vegetative growth in fruit trees.

Persimmon, or Sharon Fruit, is an ancient delicacy that only recently found its way to South African orchards and taste buds. New research is shedding light on how this fruit should be handled.

PERSIMMONS IN SOUTH AFRICA

Although persimmons have been enjoyed in countries such as China and Japan since ancient times, it has only been commercially cultivated in South Africa since 1998. Here, they are still regarded as an exotic fruit and many South Africans are yet to taste one.

Currently, more or less 400ha of persimmons are under cultivation in the Western Cape. This yields an annual harvest of between 5 000 and 6 000 tons of fruit, of which 1 000 tons are sold locally. Most of the fruit is destined for export markets, the largest being Germany. South Africa also exports persimmons to other European countries, Singapore, Canada, Thailand and Malaysia.
The objectives were to:

- Determine the production window that yields fruit that store better.
- Establish stages of maturity, using a colour chart, in order to harvest Cultar-induced early, naturally early and naturally late crops without affecting post-harvest life.
- Establish the effectiveness of Sinclair and near-infrared (NIR) technology as non-destructive sorting tools.
- Four early and four late orchards, as well as four orchards treated with Cultar were surveyed. Fruit was harvested in four colour groups of maturity. Group 1 fell in the colour chart value 2 (dark orange, very ripe); group 2 in colour chart value 3 – 4 (lighter orange); group 3 in chart value 5 – 6 (dark yellow) and group 4 in colour chart value 7 (very light yellow, just ripe).

Size and weight measurements were taken by electronic balance and a diameter-electronic calliper, while firmness was determined by using a plunger. The NIR and Sinclair measurements were taken in the same positions as those for firmness. Soft fruit percentage was determined by finger pressing and fruit damage was visually assessed.

The fruit was assessed at harvest, after six-and-a-half weeks of storage at 0°C, after four weeks at 20°C and during simulated shelf life. The results were correlated with colour charts.

The results were clear: the post-harvest quality of the fruit from all regions is improved when they are harvested at a less mature stage in colour group 3. Damage in group 2 exceeded acceptable export standards.

As far as NIR technology as a sorting tool is concerned, the study found that it could be used to non-destructively measure TSS but not firmness. Further studies should refine the potential of NRIs to grade 'Triumph' persimmons into distinctive TSS and fruit colour ranges.

Persimmons are considered a nutraceutical* fruit because it contains high concentrations of carotenoids and polyphenols. Humans get carotenoids only from food and we need them for reducing high blood pressure and that they have antibacterial effects.

*The word nutraceutical is a combination of ‘nutrition’ and ‘pharmaceutical’ and refers to food or food products that provide health and medical benefits, including the prevention and treatment of disease.

The post-harvest quality of the fruit from all regions is improved when they are harvested at a less mature stage, when the fruit is still light in colour.

Persimmons are sensitive fruit that do not like strong winds. Windy conditions stress the fruit, causing them to produce ethylene which can lead to premature opening. The fruit may, on the surface, seem to be in perfect condition but on the inside may already be softening – leading to shorter shelf life.

Growing as they do in the Western Cape, persimmon are occasionally subjected to the destructive force of the region’s north-westerly wind.

“In view of these facts, we ran a second study alongside the maturity assessment trials to determine exactly how wind damages the persimmon industry,” says Ferdie Ungerer.

This study employed four different ways of simulating the impact of wind. First, a spray machine blower was aimed at the fruit for five minutes at a time. Secondly, because wind strips leaves from trees, half the leaves of the tree sample were removed manually. The third method was to manually turn the tree while they were still on the tree. Finally, trees were manually shaken for two minutes at a time.

The study found that wind did not affect the firmness of the fruit. However, defoliation and turning of stalks resulted in increased softening during storage. Colour development was increased during shelf life in the fruit of which the stalks were turned and where a wind blower was used. The TA was not affected by the wind.

“We will be sending the results to the technical guys at the storage facilities at Buffelsjag in Swellendam and Franschhoek,” says Mr Ungerer. “They will pass on the information to the different farmers. It will then be up to the individual Sharon Fruit growers of the Western Cape to use the information and take the necessary steps to minimize losses.”