

## The avocado tree project

### Introduction.

Aware of the need amongst the less fortunate members of our society, Rev. Michiel Burger who has a passion for the less privileged in our community, was inspired by God to start this project. What does this project aim to achieve and why choose the avocado for this?

### Something about the avocado.

The central parts of the Americas are the most important areas where the avocado, now almost cultivated all over the world, has its natural origin. The fact that the avocado hails from the Americas is quite evident from its botanical name, *Persea americana*. It belongs to the same family as our indigenous black stinkwood. The laurel, used for decades as a wreath at the Olympic Games and the camphor tree, also belong to the same family.

Several avocado cultivars are found, but the three best-known cultivars cultivated today, has each its own specific climatic requirements as a result of its adaptation to their natural environment. These cultivars are the following: The West Indian, the Mexican and the Guatemalan cultivars. (Cultivar is derived from *cultivated variety*, whether natural or in the nursery).

### Factors influencing the cultivation of avocados

Avocado flowers are bisexual, meaning that it contains both male and female parts. Cultivars are classified into groups A and B according to the time of day when the female and male flower parts become reproductively functional. An interesting point to take note of is that the flower opens only for two days. The flowers of Fuerte cultivar, which is the most popular cultivar grown in South Africa today, open as female on the afternoon of the first day, then the flower closes in late afternoon and re-opens in the male phase the following morning. The question is often raised whether it is necessary to plant more than one tree in order to produce fruit. The answer is NO! The reason for this is that the flowers on a tree are not all in the same stage of development. Some may be in the female phase while other flowers are already in the male phase.

Pollination in avocados in general, appears to be primarily caused by wind as well as large flying insects such as bees and wasps.

The fruit is a berry, consisting of a single large seed, surrounded by a buttery pulp. It contains 3-30% oil. The skin is variable in thickness and texture. Fruit colour at maturity varies from green, black, purple or reddish, depending on cultivar. Fruit shape ranges from spherical to pyriform, and weigh up to 2.3 kg.

Avocados are very high in omega 3 fatty acids (the good kind of fat). It accounts for about three-quarters of the calories in an avocado. Mono-unsaturated fats can help lower cholesterol and improve heart health. Avocados also have a higher percentage of protein -- about 4 grams -- than other fruits. Their sugar levels are also comparatively low.

Avocados contain many essential vitamins, notably vitamin B5 and vitamin K, as well as fibre, which aids digestion and helps maintain regularity. Additionally, avocados are high in minerals such as magnesium, phosphorus, iron and potassium, containing even more potassium per gram than bananas.

Each cultivar has very specific growing conditions, of which temperature and soil type are certainly of the most important factors.

There is strong evidence that the Fuerte cultivar is probably a natural hybrid between the Guatemalan and Mexican races. It has a much wider climatic, especially temperature, tolerance. The minimal temperature for survival is about -4°C, but it cannot tolerate any frost, nor very high temperatures during flowering. The optimum growth temperature is between 20 to 24°C. This fact, combined with the high level of humidity close to the sea, plays an important role during flowering and fruit set, and stresses the reason why the George area is so suitable for the cultivation of avocados, particularly the Fuerte cultivar.

### Rainfall

Most of the commercially grown cultivars, including the Fuerte cultivar, are sensitive to water stress. Although the average annual rainfall is less than the desirable 1000 mm, with additional irrigation it is possible to grow avocados in the George area. Fortunately George normally receives rain throughout the year, but it is however critically important to note that during a draught, especially during the flowering period, supplementary irrigation might be necessary.

### **How to plant an avocado tree.**

The success of growing an avocado tree depends on many factors, one of them, as already mentioned, is the soil in which it is planted, in particular the quality, depth and drainage of the soil. For this reason a representative sample of the soil for each site must be taken for soil analysis. The soil must be well-drained and aerated because the roots are intolerant of anaerobic conditions and very susceptible to a fungus (*Phytophthora*) growing in soil that is waterlogged e.g. clay soils. A pH of the soil of 5-5.8 is optimal for growth and fruit yield.

The mature avocado tree is a medium to large tree, 9-20m in height and will require a lot of space, therefore select the position carefully.

Various authors recommended different depths of the hole, but the best successes were obtained by making the holes 1x1x1m. It is important that the holes must be square and not round, especially in cases where the surrounding soil is hard and compacted. This is to promote the spreading of the lateral roots in various directions.

Where the top-soil depth is less than 1m, the ground level can be raised by building a mound, using soil of good quality. The adding of fertilisers and compost is important in preparing the hole for planting.

On receiving the plants from the nursery, it should be kept in a shady area because the plastic bags will become too hot and the roots could burn before planting.

Plant the trees as soon as possible to prevent the root system from becoming root-bound (roots growing in circles inside the plastic bag) or suffer from nutrient deficiencies.

Plant the trees to the same depth as they were in the planting bags, and plant them in a slightly raised position.

Young trees should be irrigated, and a small basin around the tree will ensure that the roots get enough water. Apply frequent irrigation, 50l per tree each week is enough, but during a severe drought it can be increased to 100l per week, resuming to 50l per week when conditions return to normal again. It is important to give this warning: over-irrigation is just as harmful as too little water. It is therefore necessary to examine the subsoil regularly to determine the moisture content of the soil.

Depending on how well the tree is cared for, it can start bearing fruit after four years.

Although a mature tree can produce up to a million flowers during the flowering period, it loses most of its flowers without setting fruit. This is normal. On average one can expect to harvest about 100 to 200 fruit per tree per year.

Trees are often damaged by animals. It is therefore important to protect them from goats and cattle. A tent-like screen that will prevent this, can be made of poles and chicken wire.

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