

# AN OVERVIEW OF THE SOUTH AFRICAN AVOCADO INDUSTRY

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## HISTORY

Avocados were likely introduced into South Africa by settlers coming from the West Indies and other Dutch colonies between 1652 and 1700. Supporting this theory are references to early specimens suggesting that they were all seedlings of the West Indian race. Interestingly, in some parts of the country large, low-oil fruit from West Indian seedling trees are still preferred over higher quality avocado varieties introduced from California.

Between 1932 and 1938 the first experimental avocado cultivar evaluation block was planted for the Department of Agriculture near Nelspruit (see Figure 1). Large-scale plantings of avocado commenced in the same region in 1938, once it was shown that the imported California varieties performed well in the region. These plantings were mainly made in the mountainous areas of the Lowveld – (Figures 2 and 3) a region characterized by grasslands, thorn tree scrub and abundant wildlife.

The avocado industry currently consists of around 3 million trees planted on approximately 36,000 acres. Total production varies between 125 to 250 million pounds. The most important production areas are Tzaneen with 38%

In 2001, South Africa was the largest exporter of avocados worldwide. About 60% of the total avocado crop is exported annually with 97% of this destined for the EU. The export volumes are around 50/50 Hass/Fuerte



Figure 1. Most avocados are produced in the eastern part of South Africa, a subtropical region with summer rainfall.

## THE INDUSTRY

Climactically, the industry is mostly located in warm to cool subtropical areas with a predominantly summer rainfall of approximately 30 – 45 inches. Most soils are of granitic or doleritic origin, are highly leached, acid to very acid, and are infertile. They are mostly oxisols (red clay loams to loamy clays), and are basically well drained in spite of clay contents from 20 to over 50%.

of the trees, followed by the Nelspruit area at 33%, Levubu at 21% and the Natal Midlands at 8% (Figure 1).

While Fuerte still dominates South African acreage at around 40% of the total, Hass now accounts for approximately 35% of acreage and is the only variety seeing significant expansion. Ryan, Pinkerton and Edranol are also grown, and there is a keen interest in Lamb Hass, Harvest and Gem.

with a small amount of Pinkerton. The largest EU markets for South African avocados are Germany, France and the UK. South Africa's main competitors on EU markets are Kenya, Spain, Mexico, Chile, Israel, Peru and the U.S.

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## **SOUTH AFRICAN AVOCADO INDUSTRY**

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The South African avocado industry is under the leadership of the South African Avocado Growers Association (SAAGA) which is funded by voluntary levies from all members. Its mission is to improve the economic viability of the production, packaging and marketing of avocados.

SAAGA encourages coordinated fruit exports, funds limited field and postharvest research, and organizes grower meetings. Two field representatives and one technical officer serve as the “extension team” working with the approximately 500 individual growers. Under SAAGA’s leadership, the industry is very tight-knit, with most growers participating in monthly “study group” meetings held in each region. These meetings generally include a field tour and barbecue, and serve as both

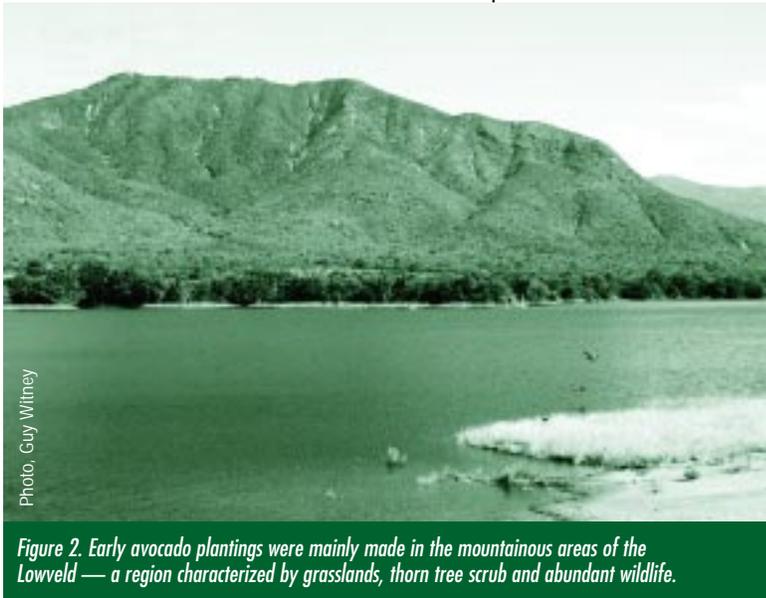
Avocado consumption in South Africa has been increasing due to efforts by SAAGA to develop the domestic market. Their marketing tools emulate those used by CAC and include radio campaigns, celebrity chef recipe features, recipe competitions and print advertisements. Current domestic consumption is between 2.5 and 3.0 lbs. per capita, with a long-range target of 5 lbs.

### **PLANTING AND ORCHARD SYSTEMS**

There are six registered avocado nurseries in South Africa producing certified disease free trees. Most new trees are on clonal rootstocks with Duke 7 the predominant choice. The Merensky series of clonal rootstocks developed by Merensky Technological Services, Tzaneen, is showing promise in local trials and the first trees will be available to South African growers in 2003.

Most orchards are now trained to hedgerows with trees spaced

approximately 12–15 feet in the row. Rows are spaced 18–20 feet apart. A combination of mechanical hedgerow cutting and plant growth regulators (triazoles) are used to control vegetative growth (Figure 4).



Photo, Guy Witney

*Figure 2. Early avocado plantings were mainly made in the mountainous areas of the Lowveld — a region characterized by grasslands, thorn tree scrub and abundant wildlife.*

educational and social functions. Growers are quick to embrace new technologies and are progressive by world standards. SAAGA produces an annual yearbook containing the results of their research, a monthly newsletter called AvoInfo, and they also run a web site at: <http://www.avocado.co.za/>

While in many growing areas summer rainfall is abundant, winters are very dry and irrigation is required to maintain production and optimal tree condition. Systems generally are similar to those in California with Israeli designed mini-sprinkler systems dominating the industry. Leaf and soil analysis are performed routinely and tree nutrition is



Photo, Guy Witney

Figure 4. A mature Hass orchard with trees spaced approximately 15 feet apart in the row, with rows 20 feet apart. A combination of mechanical hedgerow cutting and plant growth regulators (triazoles) are used to control vegetative growth. Velvet beans are planted in the row middles to provide organic matter, a refuge for beneficial insects and improve the soil.

based on norms that have been adapted from those established in California. Nitrogen is the key element manipulated to balance vegetative growth and fruiting. Growing conditions and soils are diverse, so specific nutrition recommendations are made for each grower based on leaf analysis. Because of their highly acidic soil profiles (pH 4 – 4.5), deep lime incorporation into new orchard soils with heavy equipment is a common practice.

Since the South African avocado industry is export oriented, fruit quality is of paramount importance. Growers recognize that good shipping quality is generally associated with adequate calcium nutrition and suitable ratios between calcium, magnesium and potassium. In spite of boron sprays during flowering and fruit set, growers continue to battle boron deficiency in orchards because of low soil levels and poor root uptake.

### PESTS AND DISEASES

The entire South African avocado crop is produced in areas with rainy and humid summer weather, resulting in several fruit fungal problems. The most serious of these is *Cercospora* spot which largely affects the Fuerte crop and has traditionally been treated with copper.

Anthracnose can also be a serious problem in wet areas on all varieties. Recently, *Colletotrichum* spot has been a problem on Pinkerton fruit.

Phytophthora root rot decimated the industry in the 1960's and 70's. Much of the early work on

phosphorus acid for Phytophthora control was conducted in South Africa and today treatments with commercial phosphite products are routine. While many growers still use injection techniques to apply the product, there is a move toward foliar sprays to mitigate tree damage. For a detailed description of the techniques currently used for Phytophthora control in South Africa, see the inset on root rot in the previous issue of AvoResearch (Vol. 2, Issue 1).

At least four species of sucking bugs (*Hemiptera* spp.) can cause serious damage to the avocado crop if not treated. Currently these insects are controlled with broad spectrum pyrethroid insecticides resulting in few options for integrated pest management. Local research is underway to test insecticides that are more target specific. Several worm species and false codling moth can both be serious pests if allowed to build up in orchards. Fruit flies are monitored and controlled with insecticide baiting.

### INTERNATIONAL FOOD SAFETY REQUIREMENTS

With an emphasis on export markets, the South African industry is moving rapidly to adopt several food safety requirements of the international community. The European Union, and particularly the United Kingdom have become particularly sensitive to food safety issues. SAAGA is currently working with a consultant to deliver a EUREP-GAP (Euro Retailer Produce Working Group – Good Agricultural Practices) document for growers to achieve compliance within the EU.

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Photo, Guy Witney

Figure 5. Merensky Technological Services researchers (left to right) Riaan Duvenhage, Stefan Köhne, and Sylvie Kreme-Köhne standing in a Phytosphthora rootstock development plot with SAAGA Technical Manager, Derek Donkin.

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This will be followed by similar documents for the packing industry which will include a GMP (Good Manufacturing Practices) manual and a HACCP (Hazard Analysis Critical Control Point) manual. Both of these manuals will allow for rapid identification and rectification of food safety and quality problems in the handling chain.

*(Note: CAC recently received a \$150,000 grant from the CDFA Buy California Initiative to produce similar documentation.)*

If this is not enough, some of the EU's retail giants are doing third-party audits of local groves, picking operations, and packing facilities and have raised the bar of food safety standards above international norms.

## RESEARCH

Research projects on avocados are mainly conducted by three entities. Two of these are public institutions, the University of Natal, Pietermaritzburg, and the Agricultural Research Council's Institute for Tropical and Subtropical Crops, Nelspruit. The private Merensky Technological Services near Tzaneen receives very limited public funding, but is a very prolific avocado research institution (Figure 5). The new Merensky series of rootstocks originate from the latter organization.

Research projects currently underway in South Africa include cultivar breeding and evaluation, tree nutrition and physiology, manipulation of growth and fruiting, pest and disease management, and postharvest physiology. Research

results are presented annually in summer (February) at the SAAGA Research Symposium. For a copy of their latest research abstracts, visit the SAAGA web site at: <http://www.avocado.co.za/>

## THE FUTURE: STRATEGIC POSITIONING FOR THE U.S. MARKET

In spite of enormous transit distances, South Africa regards the U.S. domestic market as an important future destination for their fruit. This is because they believe they could deliver Hass fruit to the U.S. domestic market from June through September, the period we currently have to ourselves. Also, their production costs are low (skilled farm labor is paid around \$0.50 to \$1.10 per hour resulting in harvest costs of 0.5 to 1 cent per pound of fruit), and foreign exchange rates from an undervalued currency drive exports.



Photo: Guy Winney

Figure 3. Mature Hass orchards in the Tzaneen area of Southern Africa. Yields are typically between 10,000 and 20,000 lbs. per acre with fruit maturing in June through September.

However, meeting the phytosanitary requirements for market access to the U.S. will be difficult. South African orchards have several pests not present in California, including fruit flies and false codling moth.

SAAGA will focus on the U.S. market over the next few years, with access as a long term goal. Their research program is looking at irradiation, fumigation and holding temperatures (coupled with CO<sub>2</sub> and 1-MCP) as a means to eradicate target pests. They realize that recent pest introductions and quarantines in the U.S. have raised the standards of pest risk analysis and mitigation procedures, making it more difficult for foreign fruit to enter domestic markets. They are very closely monitoring the work currently underway by Mexico to expand market access in the U.S.

While South Africa poses no competitive threat to the California industry at this time, we should be cognizant that this industry is progressive, export driven and could enter the market in the future if phytosanitary requirements are met. 🇺🇸

