

The pest can be controlled by sanitation, which is the removal of all plants showing symptoms of stem borer attack. Trees with twisted taproots must be avoided because these deformed roots result in weak trees that have been shown to have a high incidence of stem-borer infestation.

#### ANTESTIA STINK BUG (*ANTESTIOPSIS* SP.)

It is an important pest in coffee and it can destroy up to 50 % of the crop in a season. In the nymphal and adult stages the insect feeds on flower buds, young shoots, growth points and coffee berries. This causes the drop of young, immature berries or rotting of the coffee beans. Affected flower buds turn brown or black while affected seeds are usually malformed and produce lighter berries.

By keeping the plants open through maintenance pruning, *Antestia* bugs will do less damage. The bugs can be sprayed with contact insecticides. Monitor bushes every week by shaking branches and by counting the number of *Antestia* stink bugs that are collected.

#### COFFEE LEAF RUST DISEASE

Two species of *Hemileia* fungus have been reported as causing rust on coffee, viz. *H. vastatrix* and *H. coffeicola*, however, *H. vastatrix* is regarded as the most pathogenic of the two. Symptoms are mainly confined to the leaves, and start as small, yellow spots on the undersurface of the leaves. As the lesions increase in size, they darken to a typical orange colour. Livid or brownish blotches eventually make their appearance on the upper surface of the leaves. As the lesions mature, the centres of the lesions on the lower surface become necrotic.

Copper oxychloride, captafol and triadimefon have been registered for use against coffee rust. The first full-cover spray is applied in October, although the first copper spray could be applied in November.

The captafol sprays should be repeated every month at a rate of 4,5kg/ha until the end of the rainy season.

#### COFFEE BERRY DISEASE

The fungus *Glomerella cingulata* causes this disease. It results a dark brown rot, which destroys the beans and causes the berries to dry out.

Considerable control has been obtained by constant applications of a Perenox spray and more recently, growers have been advised to use copper fungicides in four applications: just before the rains and a fortnightly applications, together with two more later in the year. The use of resistant cultivars is also effective.

# Coffee



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## Background

The coffee plant is a woody perennial evergreen that belongs to the Rubiaceae family. The plant can grow to heights of 10 m if not pruned, but producing countries maintain coffee at 3 m to facilitate picking. Two main species are cultivated today. *Coffea arabica* known as Arabica coffee, accounts for 75 to 80 % of the world's production. *Coffea canephora*, known as Robusta coffee, is a more resilient plant than the Arabica shrubs, however, it produces an inferior tasting beverage.

## Origin and distribution

Coffee originated in Africa, in the Ethiopian region known as Kaffa. From there it spread to Yemen, Arabia and Egypt where it gained huge popularity. Coffee is cultivated on no more than 200 ha in South Africa; most of this is in the KwaZulu-Natal and Mpumalanga provinces, North West Province and Limpopo Province.

## Climatic and soil requirements

The suitable temperature range for coffee in South Africa is 4 to 32 °C with average temperatures ranging from 12 to 26 °C. Higher summer temperatures are necessary for proper fruit development and fruit

ripening. Coffee is sensitive to water shortages and adequate well-distributed precipitation of about 1 500 to 2 000 mm/year should occur. In South Africa, coffee is grown with an annual rainfall of about 1 000 mm, but only with irrigation to make up for the deficit in moisture.

Coffee also grows best in a soil that is slightly acidic (pH 5,5–6,5). It can be grown well in any, fertile soil provided the weather conditions are favourable. Soils must be well drained, well aerated and deep.

## Uses

Coffee is widely used as a flavourant, as in ice cream, pastries, candies, and liqueurs. Caffeine is a widespread additive in over-the-counter diet pills, painkillers and stimulants. Coffee pulp and parchment are used as manures and mulches, and are occasionally fed to cattle.

## Cultural practices

### Planting

Field planting can begin when the coffee plants in bags have a minimum of six to eight leaf pairs. Planting out in the field should be done on cloudy days, in June through to August during the wet season.

The spacing width between the rows can be 15 to 20 cm. In the rows the seeds are placed 30 to 50 cm apart, 5 to 10 cm deep and with the flat side down.

### Propagation

Propagation is usually by seed and cuttings. There is a cross between Arabica and Robusta, namely "Arabusta" that can only be propagated true-to-type. Single or double-leaf cuttings of upright young shoots are used.

## Fertilisation

It is recommended that leaf and soil analyses be made every year once the trees start producing berries. However, general recommendation for non-bearing trees in the absence of soil and leaf analyses can be an equal quantity of NPK and ammonium sulphate or urea from 250 to 300 g per tree per year.

## Irrigation

Under irrigation 50 mm should be applied before planting, followed by 25 mm afterwards. An irrigation interval of 25 mm every 10 days is essential. Keep the soil moist, but not too wet. Overwetting will enhance the risk of fungal diseases. Irrigate the plants twice a week in hot weather, and once a week in cool weather.

## Weed control

Weeds growing close to the main stem should be removed by hand. Coffee has a very shallow system of feeder roots and this practice will prevent root damage. Mulch is the ideal form of weed control in coffee, but is not usually sufficient. An integrated weed control programme should rather be considered.

## Pest and disease control

### WHITE STEM BORER (*XYLOTRUCHUS QUADRIPES*)

The adult is a black and white banded beetle (2 cm long); the head of the male beetle has distinctive raised, black ridges. Adults are active during daylight. The larvae bore through the stem of young trees (1 or 2 years old) and the trees usually die if this pest attacks them. Three or 4-year-old trees wilt and turn yellow and yield either a poor or no crop at all.

