

TECHNICAL SHEET

1000 strains of *Xanthomonas citri* pv. *mangiferae* and *indicae* isolated from cashew (Burkina Faso) and mango (Burkina Faso, Côte d'Ivoire, Benin and Togo) are maintained at CIRAD, France.

Presentation of the cashew tree

Cashew is a member of the *Anacardiaceae* family and its scientific name is *Anacardium occidentale* L. (Ghahoua and Louppe, 2020). It is a small tree that reaches a maximum height of 15 m. The trunk is short and rarely straight (Ghahoua and Louppe, 2020). The bark is gray, rough; the edge is pinkish. Leaves are simple, oblong (10-20 x 6-10 cm), round-topped, alternate, short-stalked (0.5-2 cm), leathery, with a turpentine odor when crumpled. The tree grows at altitudes below 1000 m (Ghahoua and Louppe, 2020). It tolerates a wide variety of climates with temperatures ranging from 12 to 32°C and rainfall ranging from 500 to 4000 mm (Ghahoua and Louppe, 2020). However, it requires a marked dry season of at least four months to achieve good fruiting (Ghahoua and Louppe, 2020).

Different parts of the cashew tree

The almond: it is consumed in roasted and salted form, as an accompaniment to alcoholic beverages during the aperitif. In crushed form, it is used by the food industry (chocolate, pastry and cookie) (RONGEAD/IFCI, 2008). From the almond is also extracted, by pressing, an oil used in cosmetics or pharmacology and also in culinary preparations as edible oil (RONGEAD/IFCI, 2008).

The balsam: also called Cashew Nut Shell (CNSL), has multiple uses in industry. Extracted from the shell, it is used in the manufacture of inks, insecticides, or even vehicle friction elements (RONGEAD/IFCI, 2008). This liquid is dangerous and should not be handled with bare hands. Its handling requires the use of oil, gloves, etc (RONGEAD/IFCI, 2008).

The apple: it is juicy, slightly perfumed, acid and very rich in vitamin C. This apple can be consumed by the man. The juice can be extracted to make alcohol, vinegar and syrup (RONGEAD/IFCI, 2008).

The shell: once the kernel is removed, the shell is used as fuel for cooking or drying in nut processing (RONGEAD/IFCI, 2008).

Pelicles: these are sometimes used like the shells or as a supplement to livestock feed (RONGEAD/IFCI, 2008).

Presentation of mango tree

The mango tree *Mangifera indica* L. is a tree of the *Anacardiaceae* family. It is widely cultivated for its tasty fruit, the mango. It is one of the oldest cultivated fruit trees (Lebégin, 2020). The mango tree requires a minimum of 1,200 mm of annual rainfall. The cultivation of mango can be done with an irrigation system if the annual rainfall is less than 750 mm (Lebégin, 2020).

Mango trees are tall (10-30 m), evergreen trees (PIP/COLEACP, 2013). The inflorescences, in the form of a cluster, appear at the end of the twigs on the periphery of the foliage (PIP/COLEACP, 2013). They consist of male and hermaphroditic flowers. Each inflorescence bears several thousand flowers that, after fertilization, will yield at best a few fruits (PIP/COLEACP, 2013). Average fruit set rates are very low, less than 1/1000 (PIP/COLEACP, 2013). Pollination is provided by insects: flies, thrips..., very rarely by bees (PIP/COLEACP, 2013). The fruit is a drupe (PIP/COLEACP, 2013). The epidermis, not very thick, is covered with lenticels. Depending on the variety, its coloration will vary: green, yellow, orange, purplish red, alone or mixed as spots (PIP/COLEACP, 2013).

At maturity, the flesh is colored orange-yellow (PIP/COLEACP, 2013). It can be firm, but is most often juicy. In the vicinity of the pit, fibers are observed in varying abundance depending on the variety (PIP/COLEACP, 2013). The less evolved types, of Indian origin, have a stronger turpentine flavor and are richer in fiber (PIP/COLEACP, 2013). The flattened seed is protected by a lignified seed coat (PIP/COLEACP, 2013). In monoembryonic varieties, it consists of a single zygotic embryo (derived from fertilization and whose genetic makeup is always different from the parent plant) (PIP/COLEACP, 2013). In polyembryonic varieties, it consists of one or more nucellar embryos (derived from nucellar tissues and whose genetic makeup is always the same as that of the parent plant). The germinative power of the seed is limited to a few weeks (PIP/COLEACP, 2013).

Definition of the strain

According to the French Dictionary le Robert (2021), the stump is what remains of the trunk, with the roots, when the tree has been cut down. It is also the origin of a lineage. It is also the set of organisms of the same species and coming from the same ancestor (le Robert, 2021).

Characteristics of the technology

Domed, smooth and shiny colonies of *Xanthomonas citri* pv. *mangiferae indicae* isolated from cashew and mango trees in Burkina Faso and deposited at the Collection Française de Bactéries associées aux Plantes (CFBP), Angers, France) and at CIRAD, Réunion.

Bibliographic references

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