

TECHNICAL DATA SHEET

MANGO

(MANGIFERA INDICA)

Section A: General crop information

<p>A.1</p>	<p>Worldwide Production</p>	<p>It is a fruit produced in tropical regions, considered one of the most predominant of the 21st century, in terms of consumption and growth in demand in markets such as the United States, Canada, and Europe.</p> <p>It is produced in more than 100 countries around the world, with production reaching 57 million tons in 2021, mainly in India (43%), mainland China (7%), and Pakistan (5%).</p> <p>Worldwide hectares and production have increased by an average of +2% in the period 17/21.</p>
<p>A.2</p>	<p>Primary use</p>	<p>Food: juice, pulp, compotes, nectar, syrup, jams, flour, among others.</p> <p>Personal and beauty care</p>
<p>A.3</p>	<p>Production in Costa Rica</p>	<p>It is one of the non-traditional agricultural products with the highest dynamism in the sector's exports with +45% (CAGR 2017-2021), in which by 2021 exports were made to 12 destination countries.</p> <p>Costa Rica ranked 2nd as a producer in Central America and 49th in the world.</p>
<p>A.4</p>	<p>Costa Rica's main export destination (2021)</p>	<p>Netherlands (54%) United States (17%) Panama (11%)</p>
<p>A.5</p>	<p>The main mango growing regions in Costa Rica are as follows:</p>	<p>The main mango growing regions in Costa Rica are as follows:</p> <ol style="list-style-type: none"> 1. Alajuela (Orotina, San Mateo, and Atenas) 2. Puntarenas (Central, Esparza, Miramar, and Garabito) 3. Guanacaste (Liberia, Santa Cruz, Nicoya, Nandayure, Carrillo, and Abangares) 4. San José (Puriscal, and Turubares)

Section B: Edaphoclimatic conditions

<p>B.1</p>	<p>Temperature</p>	<p>Mango production is limited to tropical and subtropical climate zones, mainly due to its susceptibility to cold. Regions with average annual temperatures between 72 and 81 °F are suitable for optimum mango development.</p>
<p>B.2</p>	<p>Rainfall</p>	<p>The adaptation range of the species is from 700 to 2500 mm, but the optimal range is between 1,000 and 1,500 mm of rainfall per year with a dry season of approximately 4 to 6 months in duration well-defined.</p>
<p>B.3</p>	<p>Winds</p>	<p>Strong winds (greater than 12 mph) can cause problems such as overturning of plants, deformation of plants, mechanical damage to leaves, flowers, and fruits, drying of flowers, reduction of pollen viability, and fall of flowers and fruits.</p>
<p>B.4</p>	<p>Altitude</p>	<p>Mango production is limited to regions below 2,625 feet in elevation in tropical climates. This may vary slightly depending on latitude and microclimate conditions.</p>
<p>B.5</p>	<p>Relative humidity</p>	<p>It has been scarcely studied, but it is known that it has a direct effect on leaf gas exchange and an indirect effect on growth, flowering, and fruiting due to the influence it has on the development of pests and diseases.</p>
<p>B.6</p>	<p>Luminosity</p>	<p>It is not very shade-tolerant. Fruits exposed to light develop better color than those that receive less light.</p>
<p>B.7</p>	<p>Soils</p>	<p>The ideal soils for mango production are those of loamy texture, deep, and with a minimum depth of 29.5 in, although the ideal soils are 3 to 5 ft deep and with a pH between 5.5 and 7.0. It can grow well in sandy, acid, or moderate</p>

B.8	Effective depth (ft)	Suitable in very deep soils >4
B.9	Stoniness (%)	No stoniness <10
B.10	pH	The optimal pH is 5.5-7.0.
B.11	Main pests and diseases	<p>Anthracnose, caused by the fungus complex <i>Glomerella cingulata/Colletotrichum gloeosporioides</i>, which causes important losses in fruit quality, and bacterial rot caused by <i>Erwinia</i> sp., which is characterized by the presence of reddish-brown spots or streaks in the phloem of branches and trunks of infested trees.</p> <p>Fruit fly is considered to be the main pest affecting mango fruit. Several members of the Tephritidae family have been identified as mango pests in various parts of the world. Some belong to the genus <i>Anastrepha</i> such as: <i>A. Suspensa</i> Loew, <i>A. Striata</i>, <i>A. Serpentina</i> Wiedemann, <i>A. Inca</i>, <i>Ceratitis Capitata</i> Wied or Mediterranean fruit fly. However, in Costa Rica, <i>Anastrepha Obliqua</i> Macquart or Caribbean fruit fly is a real problem for the mango crop and industry.</p>
B.12	Production cycles	The crop in Costa Rica has several annual production cycles, since it is a biannual crop. Peak production occurs in February, March, April, and May, but other producers prefer to produce for the local market from June to December. Exportable production is only that which is produced during the dry season.

Section C: **Nutritional Information**

C.1	Mango contains a mixture of sugar (16-18% w/v) and acids and high amounts of antioxidants (ascorbic acid) and polyphenols (carotene, as vitamin A).
	Starch is the main carbohydrate in green mango. During ripening, it is converted into reducing sugars (sucrose, glucose, and fructose). Along with these carbohydrates, small amounts of cellulose, hemicellulose, and pectin are present in ripe mango.
	High concentrations of β -carotene and other phytochemicals in mangoes may prevent leukemia and the progression of prostate, breast, and colon cancer.

Section D: **Varieties with an export focus**

D.1	In almost all markets they prefer the reddish colored fruit, especially the Tommy Atkins, Keitt, Kent, and Haden cultivars, being these the main varieties cultivated in most exporting countries. Therefore, there is worldwide competition.	
	Varieties with export focus in Costa Rica:	
	1.Keitt	Medium-sized variety, highly productive, large fruit, oval-shaped, slightly fibrous and with a small seed, good pulp quality, with ripening problems, somewhat tolerant to anthracnose.
	2.Palmer	Medium size, high production, large fruit, elongated oblong shape, yellow-reddish color, late harvest time, pulp slightly fibrous, somewhat resistant to anthracnose, and without problems of internal rotting of the fruit.
	3.Irwin	The fruit is of medium size, up to 5 in long, weighs up to 16 oz, but the average is 12 oz. It is somewhat elongated or narrow oblong in shape, the base color is orange-yellow with a bright red blush, the flesh is non-fibrous, with a mild flavor, and quality ranging from good to very good.
	4.Kent	Large fruit (5 in or more in length), the shape is oval and quite thick. The pulp is juicy and non-fibrous, sweet, and the quality is very good to excellent.
	5. Tommy Atkins	Tall variety, good fruit quality, intense red color, intermediate harvest time, good size, resistant to fruit handling at sowing and post-harvest, somewhat tolerant to anthracnose and thrips attack. In Costa Rica, it has a high incidence of fruit rot.
6. Smith	From oval to thick shape, the base color is yellow with a blush. The pulp is juicy and slightly fibrous.	