

CACTUS PEAR FRUIT

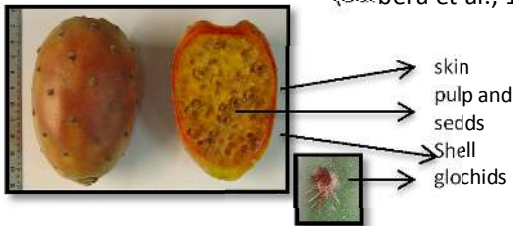
When the Spanish arrived in 1492 to Hispaniola island (now Haiti and Dominican Republic) in the Caribbean Sea, they were offered fruit of *Opuntia*, (there called cactus pear) (Kiesling R. 2012)



First figure known a cactus *Opuntia* spp

Oviedo y Valdez, Historia Natural y General de las Indias (1535)

Cactus pear is an oval berry that weighs 100-200 g. The form and size of the fruits is variable with a thick fleshy peel that is 30-40 % of the fruit total weight. The pulp flesh is 60-70 % out of total fruit weight and the seeds with hard cover are 5-10 % out of total fruit weight (Barbera et al., 1992/1994).



The thickness of the peel and the amount of pulp and seeds varies by variety.

The colors are diverse depending on species and cultivars: there are red, orange, purple, yellow, and green fruits with pulp of the same color.



Fruit characteristics:

- ✓ No climacteric
- ✓ Medium Respiration rates: (15-20 mL CO₂ kg⁻¹ h⁻¹) at 20°C.
- ✓ Low rate of Ethylene production



Chemical composition of pulp and seeds of *Opuntia ficus-indica* fruits.

Component	Fruit pulp (fresh weight)	Seeds (fresh weight)
Water (%)	85.60	5.3
Protein (%)	0.21	16.6
Lipid (%)	0.12	17.2
Fiber (%)	0.02	49.6
Pectin (%)	0.19	-
Vitamin C mg 100 g ⁻¹	22.00	-
B-carotene UI	Traces	-
Ashes (%)	0.44	3.0
Ca mg 100 g ⁻¹	28.00	16.0
Mg mg 100 g ⁻¹	28.00	75.0
K mg 100 g ⁻¹	161.00	163.0
Na mg 100 g ⁻¹	0.80	68.0
P mg 100 g ⁻¹	15.40	152.0
Fe mg 100 g ⁻¹	1.50	9.0

Source: Sawaya et al., 1983

Harvest index:

- Size of fruit > 120 gr
- Total soluble solids SST
- °Brix: more than 13 %
- Percentage pulp > 55%



The correct way to harvest cactus pear with cladodio chunk



How to increase fruit quality and value?

- ✓ reduced seed number
- ✓ producing out of peak season
- ✓ fruit shape and color
- ✓ fruit organoleptic and nutraceutical value

There are fruits that present aborted seeds, which increase the proportions of edible pulp

Consumers' preference for seedless fruits or fruit with few seeds, has orientated the genetic improvement towards the search and multiplication of varieties that present



favorable characteristics. However, fruit growth depends on the seeds.

Postharvest handle of cactus pear for international markets:

Drop of harvested cactus pear: to empty bins on moving belt to tunnel to remove glochids



Remove of glochids: cactus pear are dry-brushed to remove glochids

Selection: to select imperfections

Calibrated: packing in bulk bins or in bin with alveolus.

Used calibers in Argentina

caliber	Fruit weight	diameter
Calibre	Peso Fruta (grs)	Diametro (mm)
20	180	
24	180-150	56-58
28	150-120	
32	110-120	54-56
37	95-110	
42	85-95	52-54

Changes of color occur in the peel and pulp of *Opuntia amyclea*, during ripen.

Development and ripeness stages:

Immature: almost completely developed with dark green peel

Green: the peel begins to show change of color.

Transitional: The color can change from incipient covering up to 75 % of the fruit surface

Mature: The peel has 75-100 % of the color considered ideal for commercial harvest.

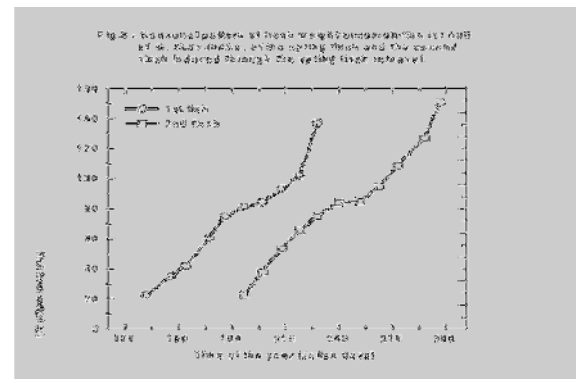
Mature: Intensity of color and appearance of small areas brown in color.



Major Innovations: FRUIT CHARACTERISTIC

- ✓ Fruit growth and ripening pattern
- ✓ Fruit ripening period (Out- of- season crop)

Italy: "Scozzolatura" Removal vegetative and reproductive buds in spring.



Inglese *et al*

Israel: Elimination of spring buds + irrigation and nitrogen fertilizer.

Mexico: Fertigation and partial banding.

Chili: Natural second flowering

- ✓ Fruit harvest and quality index
- ✓ Fruit quality parameters
- ✓ Fruit nutraceutical potential
- ✓ Fruit Harvest physiology and management

For more information please visit:

www.cactusnetwork.org

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