

# Lychee

**Lychee**<sup>[3]</sup> (US: /ˈliːtʃiː/ *LEE-chee*, UK: /ˈlaɪtʃiː/ *LIE-chee*; ***Litchi chinensis***; Chinese: 荔枝; pinyin: *lìzhī*; Jyutping: *lai6 zi1*; Pèh-ōe-jī: *nāi-chī*) is a monotypic taxon and the sole member in the genus ***Litchi*** in the soapberry family, *Sapindaceae*.

It is a tropical tree native to South China, Malaysia, and northern Vietnam.<sup>[4][5]</sup> The tree has been introduced throughout Southeast Asia and South Asia.<sup>[5]</sup> Cultivation in China is documented from the 11th century.<sup>[4]</sup> China is the main producer of lychees, followed by Vietnam, India, other countries in Southeast Asia, other countries in the South Asia, Madagascar, and South Africa. A tall evergreen tree, it bears small fleshy sweet fruits. The outside of the fruit is a pink-red, rough-textured soft shell.

Lychee seeds contain methylene cyclopropyl glycine which has caused hypoglycemia associated with outbreaks of encephalopathy in undernourished Indian and Vietnamese children who consumed lychee fruit.<sup>[6][7]</sup>

## Taxonomy

*Litchi chinensis* is the sole member of the genus *Litchi* in the soapberry family, *Sapindaceae*.<sup>[4]</sup>

It was described and named by French naturalist Pierre Sonnerat in his account "*Voyage aux Indes Orientales et à la Chine, fait depuis 1774 jusqu'à 1781*" (translation: "Voyage to the East Indies and China, made between 1774 and 1781"), which was published in 1782.<sup>[8]</sup> There are three subspecies, determined by flower arrangement, twig thickness, fruit, and a number of stamens.

- Litchi chinensis* subsp. *chinensis* is the only commercialized lychee. It grows wild in southern China, northern Vietnam, and Cambodia. It has thin twigs, flowers typically have six stamens, fruit are smooth or with protuberances up to 2 mm (0.079 in).
- Litchi chinensis* subsp. *philippinensis* (Radlk.) Leenh. It is common in the wild in the Philippines and rarely cultivated. It has thin twigs, six to seven stamens, long oval fruit with spiky protuberances up to 3 mm (0.12 in).<sup>[9]</sup>
- Litchi chinensis* subsp. *javensis*. It is only known in cultivation, in Malaysia and Indonesia. It has thick

Lychee	
<span></span> <div>A branch of a lychee tree with several ripe, red, bumpy fruits hanging from it.</div>	
Scientific classification <span><span></span></span>	
Kingdom:	<span>Plantae</span>
<i>Clade</i> :	<span>Tracheophytes</span>
<i>Clade</i> :	<span>Angiosperms</span>
<i>Clade</i> :	<span>Eudicots</span>
<i>Clade</i> :	<span>Rosids</span>
Order:	<span>Sapindales</span>
Family:	<span>Sapindaceae</span>
Tribe:	<span>Nephelieae</span>
Genus:	<span><i>Litchi</i></span> <div>Sonn.</div>
Species:	<span><i><b>L.<span> </span>chinensis</b></i></span>
Binomial name	
<span><i><b>Litchi chinensis</b></i></span> <div>Sonn.<sup>[1]</sup></div>	
Synonyms <sup>[2]</sup>	
<ul style="list-style-type: none"><li><i>Corvinia litschi</i> Stadtm. ex P.Willemet</li> <li><i>Euphoria didyma</i> Blanco</li> <li><i>Euphoria punicea</i> Lam.</li> <li><i>Litchi sinensis</i> J.F.Gmel.</li> <li><i>Nephelium chinense</i> (Sonn.) Druce</li></ul>	

twigs, flowers with seven to eleven stamens in sessile clusters, smooth fruit with protuberances up to 1 mm (0.039 in).<sup>[4][10]</sup>

- *Nephelium didymum* Craib
- *Scytalia chinensis* Gaertn.
- *Scytalia squamosa* Stokes

## Description

### Tree

*Litchi chinensis* is an evergreen tree that is frequently less than 15 m (49 ft) tall, sometimes reaching 28 m (92 ft).<sup>[11]</sup> Its evergreen leaves, 12.5 to 20 cm (4.9 to 7.9 in) long, are pinnate, having 4 to 8 alternate, elliptic-oblong to lanceolate, abruptly pointed, leaflets,

The bark is grey-black, the branches a brownish-red. Its evergreen leaves are 12.5 to 20 cm (4.9 to 7.9 in) long, with leaflets in two to four pairs.<sup>[4]</sup> Lychee are similar in foliage to the family *Lauraceae*, likely due to *convergent evolution*. They are adapted by developing leaves that repel water, and are called *laurophyll* or *lauroid* leaves.

Flowers grow on a *terminal inflorescence* with many *panicles* on the current season's growth. The panicles grow in clusters of ten or more, reaching 10 to 40 cm (3.9 to 15.7 in) or longer, holding hundreds of small white, yellow, or green flowers that are distinctively fragrant.<sup>[10]</sup>



*L. chinensis* tree at *Parque Municipal Summit* in *Panama*



*L. chinensis* flowers

### Fruit

The lychee bears fleshy *fruits* that mature in 80–112 days depending on climate, location, and cultivar. Fruits vary in shape from round to ovoid to heart-shaped, up to 5 cm long and 4 cm wide (2.0 in × 1.6 in), weighing approximately 20 g.<sup>[11][12]</sup>

The thin, tough skin is green when immature, ripening to red or pink-red, and is smooth or covered with small sharp protuberances roughly textured. The *rind* is inedible but easily removed to expose a layer of translucent white fleshy *aril* with a floral smell and a sweet flavor.<sup>[11]</sup> The skin turns brown and dry when left out after harvesting.

Lychee	
Chinese	荔枝
Transcriptions	
Standard Mandarin	
Hanyu Pinyin	Lìzhī
Gwoyeu Romatzyh	Lihjy
Wade–Giles	Lì <sup>4</sup> -chih <sup>1</sup>
IPA	<span>[lǐ˥˥tʂʅ˥]</span>
Yue: Cantonese	
Yale Romanization	Laihjī
Jyutping	Lai <sup>6</sup> -zi <sup>1</sup>
IPA	<span>[le̞i˥˥t͡si˥˥]</span>
Southern Min	
Hokkien POJ	Nāi/Lāi-chi
Tâi-lô	Nāi/Lāi-tsi



*Pierre Sonnerat's* drawing from *Voyage aux Indes Orientales et à la Chine* (1782)<sup>[8]</sup>

The fleshy, edible portion of the fruit is an aril, surrounding one dark brown inedible seed that is 1 to 3.3 cm long and 0.6 to 1.2 cm wide (0.39–1.30 by 0.24–0.47 in). Some cultivars produce a high percentage of fruits with shriveled aborted seeds known as 'chicken tongues'. These fruits typically have a higher price, due to having more edible flesh.<sup>[10]</sup> Since the floral flavor is lost in the process of canning, the fruit is usually eaten fresh.<sup>[11]</sup>



Whole and opened fruit with seed

## History

Cultivation of lychee began in the region of southern China, going back to 1059 AD, Malaysia, and northern Vietnam.<sup>[4]</sup> Unofficial records in China refer to lychee as far back as 2000 BC.<sup>[13]</sup> Wild trees still grow in parts of southern China and on Hainan Island. The fruit was used as a delicacy in the Chinese Imperial Court.<sup>[14]</sup>

In the 1st century during the Han dynasty, fresh lychees were a popular tribute item, and in such demand at the Imperial Court that a special courier service with fast horses would bring the fresh fruit from Guangdong.<sup>[15]</sup> There was great demand for lychee in the Song Dynasty (960-1279), according to Cai Xiang, in his *Li chi pu* (Treatise on Lychees). It was also the favorite fruit of Emperor Li Longji (Xuanzong)'s favored concubine Yang Yuhuan (Yang Guifei). The emperor had the fruit delivered at great expense to the capital.<sup>[11]</sup>



"Lici Fruit Tree" in Michal Boym's *Flora Sinensis* (1657)

The lychee attracted the attention of European travelers, such as the Spanish bishop, explorer, and sinologist Juan González de Mendoza in his *History of the great and mighty kingdom of China* (1585; English translation 1588), based on the reports of Spanish friars who had visited China in the 1570s gave the fruit high praise:<sup>[16]</sup>

[T]hey haue a kinde of plummes, that they doo call *lechias*, that are of an exceeding gallant tast, and neuer hurteth any body, although they shoulde eate a great number of them.

Later the lychee was described and introduced to the West in 1656 by Michal Boym, a Polish Jesuit missionary (at that time Polish–Lithuanian Commonwealth).<sup>[17]</sup>

Lychee was introduced in the Pakistani region (then British Raj) in 1932 and remained an exotic plant until the 1960s when commercial production began. The crop's production expanded from Begum Kot (Lahore District) in Punjab to Hazara, Haripur, Sialkot and Mirpur Khas.

## Double domestication

Genomic studies indicate that the lychee resulted from double domestication by independent cultivation in two different regions of ancient China.<sup>[18]</sup>

## Cultivation and uses

---



Germinating lychee seed with its main root (about 3 months old)

Lychees are extensively grown in southern China, Taiwan, Vietnam and the rest of tropical Southeast Asia, the Indian Subcontinent,<sup>[19]</sup> and in tropical regions of many other countries.<sup>[4][19][20]</sup> They require a tropical climate that is frost-free and is not below the temperature of  $-4\text{ }^{\circ}\text{C}$  ( $25\text{ }^{\circ}\text{F}$ ).<sup>[4][19]</sup> Lychees require a climate with high summer heat, rainfall, and humidity, growing optimally on well-drained, slightly acidic soils rich in organic matter and mulch.<sup>[4][19]</sup>



A normal-sized seed (left) and a small-sized (Chicken tongue) seed (right)

Some 200 cultivars exist, with early and late maturing forms suited to warmer and cooler climates, respectively,<sup>[4]</sup> although mainly eight cultivars are used for commerce in China.<sup>[19]</sup> They are also grown as an ornamental tree, as well as for their fruit.<sup>[4]</sup> The most common way of propagating lychee is through a method called air layering or marcotting. Air-layers, or marcotts, are made by cutting a branch of a mature tree, covering the cut with a rooting medium, such as peat or sphagnum moss, then wrapping the medium with polyethylene film and allowing the cut to root. Once significant rooting has occurred, the marcott is cut from the branch and potted.<sup>[21]</sup>

According to folklore, a lychee tree that is not producing much fruit can be girdled, leading to more fruit production. When the central opening of trees is carried out as part of training and pruning, stereo fruiting can be achieved for higher orchard productivity.<sup>[22]</sup>

Lychees are commonly sold fresh in Asian markets.<sup>[4][19]</sup> The red rind turns dark brown when the fruit is refrigerated, but the taste isn't affected. It is also sold canned year-round. The fruit can be dried with the rind intact, at which point the flesh shrinks and darkens.<sup>[11]</sup>

## Cultivars

---

There are numerous lychee cultivars, with considerable confusion regarding their naming and identification. The same cultivar grown in different climates can produce very different fruit. Cultivars can also have different synonyms in various parts of the world. Southeast Asian countries, along with Australia, use the original Chinese names for the main cultivars. India grows more than a dozen different cultivars. South Africa grows mainly the "Mauritius" cultivar. Most cultivars grown in the United States were imported from China, except for the "Groff", which was developed in the state of Hawaii.<sup>[12]</sup>

Different cultivars of lychee are popular in various growing regions and countries. In China, popular cultivars include Sanyuehong, Baitangying, Baila, Muzaffarpur, Samastipur, Shuidong, Feizixiao, Dazou, Heiye, Nuomici, Guiwei, Huaizhi, Lanzhu, and Chenzi. In Vietnam, the most popular cultivar is Vai Thieu

Hai Duong. In the US, production is based on several cultivars, including Mauritius, Brewster, and Hak Ip.<sup>[10][23]</sup> India grows more than a dozen named cultivars, including Shahi (Highest Pulp %), Dehradun, Early Large Red, Kalkattia and Rose Scented.<sup>[12][24]</sup>



The Mauritius cultivar

## Nutrients

Raw lychee fruit is 82% water, 17% carbohydrates, 1% protein, and contains negligible fat (table). In a 100-gram (3.5 oz) reference amount, raw lychee fruit supplies 66 calories of food energy. The raw pulp is rich in vitamin C, having 72 mg per 100 grams – an amount representing 86% of the Daily Value – but contains no other micronutrients in significant content (table).

## Phytochemicals

Lychees have moderate amounts of polyphenols,<sup>[27]</sup> including flavan-3-ol monomers and dimers as major compounds representing about 87% of total polyphenols, which declined in content during storage or browning.<sup>[28]</sup> Cyanidin-3-glucoside represented 92% of total anthocyanins.<sup>[28]</sup>

## Poisoning

In 1962, it was found that lychee seeds contained methylenecyclopropylglycine (MCPG), a homologue of hypoglycin A, which caused hypoglycemia in human and animal studies.<sup>[29]</sup> Since the end of the 1990s, unexplained outbreaks of encephalopathy occurred, appearing to affect only children in India<sup>[30]</sup> (where it is called *chamki bukhar*),<sup>[31]</sup> and northern Vietnam (where it was called Ac Mong encephalitis after the Vietnamese word for nightmare) during the lychee harvest season from May to June.<sup>[32][33]</sup>

A 2013 investigation by the U.S. Centers for Disease Control and Prevention (CDC), in India, showed that cases were linked to the consumption of lychee fruit,<sup>[34]</sup> causing a noninflammatory encephalopathy that mimicked symptoms of Jamaican vomiting

### Lychees, raw, 100 g



Peeled lychee fruits

#### Nutritional value per 100 g (3.5 oz)

<b>Energy</b>	276 kJ (66 kcal)	
<b>Carbohydrates</b>	16.53 g	
Sugars	15.23 g	
Dietary fiber	1.3 g	
<b>Fat</b>	0.44 g	
<b>Protein</b>	0.83 g	
<b>Vitamins</b>	<b>Quantity</b>	<b>%DV<sup>†</sup></b>
Thiamine (B <sub>1</sub> )	0.011 mg	1%
Riboflavin (B <sub>2</sub> )	0.065 mg	5%
Niacin (B <sub>3</sub> )	0.603 mg	4%
Vitamin B <sub>6</sub>	0.1 mg	6%
Folate (B <sub>9</sub> )	14 µg	4%
Vitamin C	71.5 mg	79%
<b>Minerals</b>	<b>Quantity</b>	<b>%DV<sup>†</sup></b>
Calcium	5 mg	0%
Iron	0.13 mg	1%
Magnesium	10 mg	2%

sickness.<sup>[35]</sup> Because low blood sugar (hypoglycemia) of less than 70 mg/dL in the undernourished children on admission was common, and associated with a poorer outcome (44% of all cases were fatal) the CDC identified the illness as a hypoglycemic encephalopathy.<sup>[34]</sup>

The investigation linked the illness to hypoglycin A and MCPG toxicity, and to malnourished children eating lychees (particularly unripe ones) on an empty stomach.<sup>[7]</sup>

The CDC report recommended that parents ensure their children limit lychee consumption and have an evening meal, elevating blood glucose levels that may be sufficient to deter illness.<sup>[34][35]</sup>

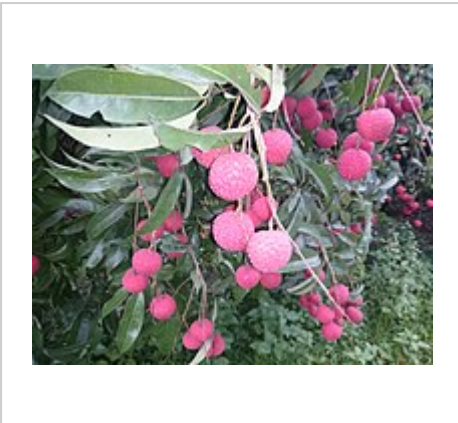
Earlier studies had incorrectly concluded that transmission may occur from direct contact with lychees contaminated by bat saliva, urine, or guano or with other vectors, such as insects found in

<u>Manganese</u>	0.055 mg	2%
<u>Phosphorus</u>	31 mg	2%
<u>Potassium</u>	171 mg	6%
<u>Sodium</u>	1 mg	0%
<u>Zinc</u>	0.07 mg	1%
<b>Other constituents</b>		
<u>Water</u>	81.8 g	
<a href="https://fdc.nal.usda.gov/fdc-app.html#/food-details/169086/nutrients">Full Link to USDA entry in FoodData Central (https://fdc.nal.usda.gov/fdc-app.html#/food-details/169086/nutrients)</a>		
†Percentages estimated using <u>US recommendations for adults</u> , <sup>[25]</sup> except for potassium, which is estimated based on expert recommendation from the <u>National Academies</u> . <sup>[26]</sup>		

lychee trees or sand flies, as in the case of Chandipura virus.<sup>[32]</sup> A 2017 study found that pesticides used in the plantations could be responsible for the encephalitis and deaths of young children in Bangladesh.<sup>[36][37]</sup>

## Gallery

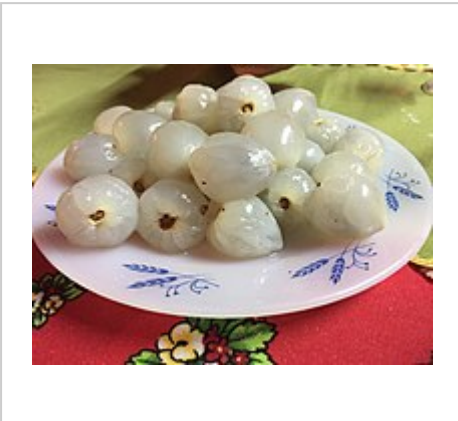
---



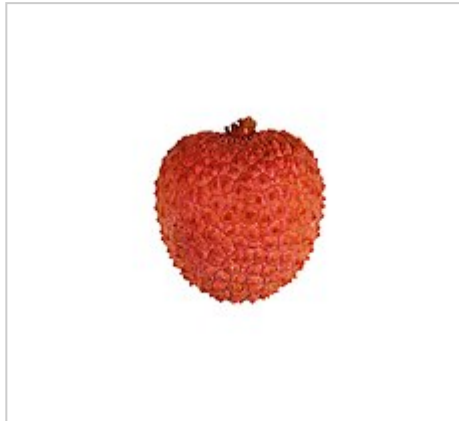
China 3 cultivar of lychee fruit



Lychee fruits at a market in West Bengal, India



Peeled lychee fruits



Lychee Fruit



Lychee at a market in Uttar Pradesh, India

## See also

---

- Ackee
- China 3 lychee
- Chinese food therapy
- Guinep (*Melicoccus bijugatus*)
- Korlan
- Lanzones
- Lichido liqueur
- List of culinary fruits
- Longan
- Lychee wine
- Muzaffarpur
- Rambutan

## References

---

1. "*Litchi chinensis*" (<https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=22399>). *Germplasm Resources Information Network*. Agricultural Research Service, United States Department of Agriculture. Retrieved 19 January 2010.
2. "*Litchi chinensis* (Thunb.) H.Deane" (<http://www.worldfloraonline.org/taxon/wfo-0000446283>). *World Flora Online*. World Flora Consortium. 2022. Retrieved 17 December 2022.
3. Also sometimes spelled *litchi*, *liechee*, *liche*, *lizhi*, *li zhi*, or *lichee*.
4. Morton, J.F. (1987). *Lychee*. In: *Fruits of Warm Climates* (<http://www.hort.purdue.edu/newcrop/morton/lychee.html>). West Lafayette, Indiana, USA: Center for New Crops and Plant Products, Purdue University, Department of Horticulture and Landscape Architecture. pp. 249–259. Retrieved 30 October 2013.
5. "*Litchi chinensis* Sonn. | Plants of the World Online | Kew Science" (<https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:783539-1>).
6. Spencer PS, Palmer VS (2017). "The enigma of litchi toxicity: an emerging health concern in southern Asia" (<https://doi.org/10.1016%2FS2214-109X%2817%2930046-3>). *The Lancet*. Online, 30 January 2017 (4): e383–e384. doi:10.1016/S2214-109X(17)30046-3 (<https://doi.org/10.1016%2FS2214-109X%2817%2930046-3>). PMID 28153516 (<https://pubmed.ncbi.nlm.nih.gov/28153516>).

7. Aakash Shrivastava; Anil Kumar; Jerry D Thomas; et al. (2017). "Association of acute toxic encephalopathy with lychee consumption in an outbreak in Muzaffarpur, India, 2014: a case-control study" (<https://doi.org/10.1016%2FS2214-109X%2817%2930035-9>). *The Lancet*. 30 January 2017 (online) (4): e458–e466. doi:10.1016/S2214-109X(17)30035-9 (<https://doi.org/10.1016%2FS2214-109X%2817%2930035-9>). PMID 28153514 (<https://pubmed.ncbi.nlm.nih.gov/28153514>).
8. Sonnerat, P. (1782) Voyage aux Indes Orientales et à la Chine, fait par ordre du Roi, depuis 1774 jusqu'en 1781. Tome second, p. 230. Paris.
9. "*Litchi chinensis* subsp. *philippinensis*" (<https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=102744>). *Germplasm Resources Information Network*. Agricultural Research Service, United States Department of Agriculture. Retrieved 2013-10-30.
10. Courtney Menzel (2005). *Litchi and longan: botany, production and uses* (<https://books.google.com/books?id=49PB5MhHqkcC&pg=PA26>). Wallingford, Oxon, UK: CABI Pub. p. 26. ISBN 978-0-85199-696-7.
11. Davidson, Jane L.; Davidson, Alan; Saberi, Helen; Jaine, Tom (2006). *The Oxford companion to food* (<https://books.google.com/books?id=JTr-ouCbL2AC&pg=PA467>). Oxford [Oxfordshire]: Oxford University Press. p. 467. ISBN 978-0-19-280681-9.
12. Hosahalli Ramaswamy; Diane Barrett; Laszlo P. Somogyi (2005). *Processing fruits: science and technology* (<https://books.google.com/books?id=S-yJSAR5b04C&pg=PA687>). Boca Raton: CRC Press. p. 687. ISBN 978-0-8493-1478-0.
13. Andersen, Peter A.; Schaffer, Bruce (1994). *Handbook of environmental physiology of fruit crops* (<https://books.google.com/books?id=wynac3NvzLsC&pg=PA123>). Boca Raton: CRC Press. pp. 123–140. ISBN 978-0-8493-0179-7.
14. Bishop, Kevin (1997). *China's Imperial Way: Retracing an Historical Trade and Communications Route from Beijing to Hong Kong* ([https://books.google.com/books?id=1c0UyPNF\\_I0C](https://books.google.com/books?id=1c0UyPNF_I0C)). China Books. p. 17. ISBN 9622175112. Retrieved 2 January 2020.
15. Yu, Yingshi (2016). *Chinese History and Culture. Volume 1, Sixth Century B.C.E. to Seventeenth Century*. New York: Columbia University Press. p. 114. ISBN 978-0-231-54201-2. OCLC 933211532 (<https://www.worldcat.org/oclc/933211532>).
16. Juan González de Mendoza, *The history of the great and mighty kingdom of China and the situation thereof* (<https://archive.org/stream/historyofgreatmi14151gonz#page/14/mode/2up>). English translation by Robert Parke, 1588, in an 1853 reprint by Hakluyt Society. Page 14. The Spanish version (in a 1944 reprint) has *lechías*.
17. Kajdański, Edward (1999). "Flora Chin". *Michał Boym: ambasador Państwa Środka* (in Polish). Warszawa: Książka i Wiedza. p. 183. ISBN 9788305130967.
18. Hu, Guibing; Feng, Junting; Xiang, Xu; et al. (January 2022). "Two divergent haplotypes from a highly heterozygous lychee genome suggest independent domestication events for early and late-maturing cultivars" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8755541>). *Nature Genetics*. **54** (1): 73–83. doi:10.1038/s41588-021-00971-3 (<https://doi.org/10.1038%2FS41588-021-00971-3>). ISSN 1546-1718 (<https://www.worldcat.org/issn/1546-1718>). PMC 8755541 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8755541>). PMID 34980919 (<https://pubmed.ncbi.nlm.nih.gov/34980919>).
19. SK Mitra (2000). "Overview of lychee production in the Asia-Pacific region" (<http://www.fao.org/3/ac684e/ac684e04.htm>). Food and Agricultural Organization of the United Nations, Office for Asia and the Pacific. Retrieved 12 June 2020.
20. Crane, Jonathan H.; Carlos F. Balerdi; Ian Maguire (2008) [1968]. "Lychee growing in the Florida home landscape" (<http://edis.ifas.ufl.edu/MG051>). University of Florida. Retrieved 30 June 2009.

21. Menzel, C.M. (January 1985). "Propagation of lychee: A review". *Scientia Horticulturae*. **25** (1): 31–48. doi:10.1016/0304-4238(85)90074-3 (<https://doi.org/10.1016%2F0304-4238%2885%2990074-3>). ISSN 0304-4238 (<https://www.worldcat.org/issn/0304-4238>).
22. "Good management practices in litchi" (<http://web.archive.org/web/20210820161034/https://www.nrclitchi.org/wp-content/uploads/2016/02/good-management-practices-in-litchi.pdf>) (PDF). National Research Centre on Litchi, Bihar, India. 2016. Archived from the original (<https://www.nrclitchi.org/wp-content/uploads/2016/02/good-management-practices-in-litchi.pdf>) (PDF) on 20 August 2021. Retrieved 24 November 2016.
23. Boning, Charles R. (2006). *Florida's Best Fruiting Plants: Native and Exotic Trees, Shrubs, and Vines*. Sarasota, Florida: Pineapple Press, Inc. p. 132.
24. Kadam, S. S.; Salunkhe, D. K. (1995). *Handbook of fruit science and technology: production, composition, storage, and processing* ([https://books.google.com/books?id=v2WnS\\_2ZmDwC&pg=PA436](https://books.google.com/books?id=v2WnS_2ZmDwC&pg=PA436)). New York: M. Dekker. p. 436. ISBN 978-0-8247-9643-3.
25. United States Food and Drug Administration (2024). "Daily Value on the Nutrition and Supplement Facts Labels" (<https://www.fda.gov/food/nutrition-facts-label/daily-value-nutrition-and-supplement-facts-labels>). Retrieved 2024-03-28.
26. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Food and Nutrition Board; Committee to Review the Dietary Reference Intakes for Sodium and Potassium (2019). Oria, Maria; Harrison, Meghan; Stallings, Virginia A. (eds.). *Dietary Reference Intakes for Sodium and Potassium* (<http://www.ncbi.nlm.nih.gov/books/NBK538102/>). The National Academies Collection: Reports funded by National Institutes of Health. Washington, DC: National Academies Press (US). ISBN 978-0-309-48834-1. PMID 30844154 (<https://pubmed.ncbi.nlm.nih.gov/30844154>).
27. Pierre Brat; Stéphane Georgé; Annick Bellamy; Laure Du Chaffaut; Augustin Scalbert; Louise Mennen; Nathalie Arnault; Marie Josèphe Amiot (September 2006). "Daily polyphenol intake in France from fruit and vegetables" (<https://doi.org/10.1093%2Fjn%2F136.9.2368>). *The Journal of Nutrition*. **136** (9): 2368–2373. doi:10.1093/jn/136.9.2368 (<https://doi.org/10.1093%2Fjn%2F136.9.2368>). PMID 16920856 (<https://pubmed.ncbi.nlm.nih.gov/16920856>).
28. Donglin Zhang; Peter C. Quantick; John M. Grigor (2000). "Changes in phenolic compounds in Litchi (*Litchi chinensis* Sonn.) fruit during postharvest storage". *Postharvest Biology and Technology*. **19** (2): 165–172. doi:10.1016/S0925-5214(00)00084-3 (<https://doi.org/10.1016%2FS0925-5214%2800%2900084-3>).
29. Gray, D. O.; Fowden, L (1962). "Alpha-(Methylenecyclopropyl)glycine from Litchi seeds" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1243468>). *The Biochemical Journal*. **82** (3): 385–9. doi:10.1042/bj0820385 (<https://doi.org/10.1042%2Fbj0820385>). PMC 1243468 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1243468>). PMID 13901296 (<https://pubmed.ncbi.nlm.nih.gov/13901296>).
30. "Litchi virus kills 8 kids in Malda" (<http://timesofindia.indiatimes.com/city/kolkata/Litchi-virus-kills-8-kids-in-Malda/articleshow/36225598.cms>). *Times of India*. 8 June 2014. Retrieved 12 June 2014.
31. Agence France-Presse (13 June 2019). "At least 31 children in India killed by toxin in lychees" (<https://www.theguardian.com/world/2019/jun/13/at-least-31-children-in-india-killed-by-toxin-in-lychees>). *The Guardian*. Retrieved 13 June 2019.

32. Paireau, J; Tuan, N. H.; Lefrançois, R; Buckwalter, M. R.; Nghia, N. D.; Hien, N. T.; Lortholary, O; Poirée, S; Manuguerra, J. C.; Gessain, A; Albert, M. L.; Brey, P. T.; Nga, P. T.; Fontanet, A (2012). "Litchi-associated acute encephalitis in children, Northern Vietnam, 2004-2009" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3559149>). *Emerging Infectious Diseases*. **18** (11): 1817–24. doi:10.3201/eid1811.111761 (<https://doi.org/10.3201/eid1811.111761>). PMC 3559149 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3559149>). PMID 23092599 (<https://pubmed.ncbi.nlm.nih.gov/23092599>).
33. Singh HP, Babita S. "Lychee production in India" (<http://www.fao.org/docrep/005/ac684e/ac684e08.htm>). Food and Agricultural Organization of the UN. Retrieved 12 June 2014.
34. Shrivastava A, et al. (30 January 2015). "Outbreaks of Unexplained Neurologic Illness — Muzaffarpur, India, 2013–2014" (<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6403a1.htm>). *MMWR. Morbidity and Mortality Weekly Report*. **64** (3): 49–53. PMC 4584556 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4584556>). PMID 25632950 (<https://pubmed.ncbi.nlm.nih.gov/25632950>). Retrieved 30 Jan 2015.
35. Barry, Ellen (31 January 2017). "Dangerous Fruit: Mystery of Deadly Outbreaks in India Is Solved" (<https://nytimes.com/2017/01/31/world/asia/lychee-litchi-india-outbreak.html>). *New York Times*. Retrieved 1 February 2017.
36. "Pesticides May Have Caused South Asian Children's Sudden Deaths" (<https://www.voanews.com/a/pesticides-lychee-south-asian-children-sudden-deaths/3958831.html>). Voa news. 25 July 2017. Retrieved 28 July 2017.
37. Mohammed Saiful Islam (2017). "Outbreak of Sudden Death with Acute Encephalitis Syndrome Among Children Associated with Exposure to Lychee Orchards in Northern Bangladesh, 2012" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5590581>). *The American Journal of Tropical Medicine and Hygiene*. **97** (3): 949–957. doi:10.4269/ajtmh.16-0856 (<https://doi.org/10.4269/ajtmh.16-0856>). PMC 5590581 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5590581>). PMID 28749763 (<https://pubmed.ncbi.nlm.nih.gov/28749763>).



## Further reading

---

- Boning, Charles R. (2006). "Lychee". *Florida's Best Fruiting Plants: Native and Exotic Trees, Shrubs, and Vines*. Sarasota, Florida: Pineapple Press, Inc. pp. 130–133.
- Hui, Y. H. (2008). "Lychee" (<https://books.google.com/books?id=Q5XgP-aLmWIC&pg=PA606>). *Handbook of Fruits and Fruit Processing*. New Delhi: Wiley India. pp. 606–611. ISBN 978-81-265-1788-6.
- Kadam, S. S.; S. S. Deshpande (1995). "Lychee" ([https://books.google.com/books?id=v2WnS\\_2ZmDwC&pg=PA435](https://books.google.com/books?id=v2WnS_2ZmDwC&pg=PA435)). In D. K. Salunkhe; S. S. Kadam (eds.). *Handbook of Fruit Science and Technology: Production, Composition, Storage, and Processing*. New York: M. Dekker. pp. 435–443. ISBN 978-0-8247-9643-3.
- Rosengartens, Frederic (2004). "Litchi 'Nuts'" (<https://books.google.com/books?id=7CK8LFCcvtcC&pg=PA299>). *The Book of Edible Nuts*. New York: Dover Publication. pp. 299–300. ISBN 978-0-486-43499-5.

## External links

---

-  Media related to *Litchi chinensis* at Wikimedia Commons
-  The dictionary definition of *lychee* at Wiktionary

---

Retrieved from "<https://en.wikipedia.org/w/index.php?title=Lychee&oldid=1215111316>"

■