

Pineapple

Ananas comosus



A tropical fruit salad without pineapple! A Hawaiian pizza without pineapple? Or a piña colada? Pineapples are the fruit of a spiny herbaceous perennial believed to have originated in the Paraná-Paraguay Basin of South America. There is evidence that pineapple was domesticated in South America as far back as 3,200 BP and by the 1400s they were cultivated as a staple food of indigenous Americans. In 1493, Christopher Columbus brought pineapples back to Europe on his return from the New World; they were considered rare and exotic, affordable only by the richest and most powerful. It was not until after Dutchman Pieter de la Court van de Voort developed heated glasshouse technology in Holland that pineapples could be successfully cultivated in Europe.



Probable origin of pineapple: Encyclopedia of Life, <http://eol.org/pages/1126520/details>

Pineapple fruits are an *aggregate* of up to 100 spirally arranged flowers. As the fertilised flowers develop into fruit, they *fuse* to produce the *pineapple* as we know it. So the pineapple that we eat is composed of



many individual fruits fused to a central stalk. Fruits are arranged into two helices: the majority have *eight* fruits fused in the descending anticlockwise direction and *thirteen* clockwise. This precise stacking of the fruits is reflected in its mathematical elegance, with both eight and thirteen being *Fibonacci numbers*! This number sequence often crops up in the natural world, as shown by the shading in these two pineapples, where each new number (in red) is the sum of the previous two digits: $1+1=2$; $2+1=3$; $3+2=5$; $5+3=8$; $8+5=13$ etc).



Pineapple (*Ananas comosus*) is a bromeliad in the plant family Bromeliaceae which includes many epiphytic, and some terrestrial species, most are from Tropical Central and South America and one from West Africa. Plants that grow in the upper branches of trees in tropical regions need to survive extremely hot conditions, often with limited water supply.

They do this in a number of ways, including having thick, leathery leaves to reduce water loss, tightly overlapping leaves that form water capturing ‘wells’ and perhaps one of the most interesting drought management strategies, *CAM photosynthesis*. We have talked about this cunning adaptation in earlier stories. It enables the stomates (pores) on leaf surfaces to close during daylight hours and open only at night when the air is humid. Jade plants, cacti, orchids and succulent plants in general all employ this mechanism.

Map of World distribution of bromeliads: Wikipedia, <http://en.wikipedia.org/wiki/Bromeliad>
 Map of origin of pineapple: Encyclopedia of Life, <http://eol.org/pages/1126520/details>
 Encyclopedia of Life, <http://eol.org/pages/1126520/details>
 Johnson L. 2020. Pieter de la Court van der Voort and innovations in pineapple cultivation in early eighteenth-century gardens. De la Court on pineapple cultivation PDF (www.cascade1987.nl)
 Wikipedia: <http://en.wikipedia.org/wiki/Pineapple>
 Wikipedia: http://en.wikipedia.org/wiki/Crassulacean_acid_metabolism



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