

Ethnobotany. Lecture 23

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March 25, 2015



Outline

- 1 Fruits and vegetables
 - Important tropical fruits



Fruits and vegetables

Important tropical fruits



Mango, *Mangifera indica*

- Evergreen massive tree from sumac (Anacardiaceae) family. Cultivated in most tropical countries, especially in Africa and South Asia.
- Low fertilization rate, from hundreds of flowers only few produce fruits
- Plant of monsoon climate: requires both dry and humid season
- Manual planting, pruning, harvesting but may give fruits for 300 years
- Rich of vitamin C, A and antioxidants; known to prevent colon cancer



Mango flowers



Papaya, *Carica papaya*

- *Belongs to small family Caricaceae (close to Cruciferae)*
- *One of the most widely cultivated tropical plants*



Papaya biology

- *Fast growing, palm-like tree with short lifespan (< 20 years)*
- *Flowers of three kinds: male, female and hermaphroditic, there are ≈ 50 sexual forms*
- *Fruits contain seeds rich of mustard oils (like in cabbage family); fruits themselves are rich of starch, sugars, vitamin A and lycopene, and also of papain, peptidase enzyme*



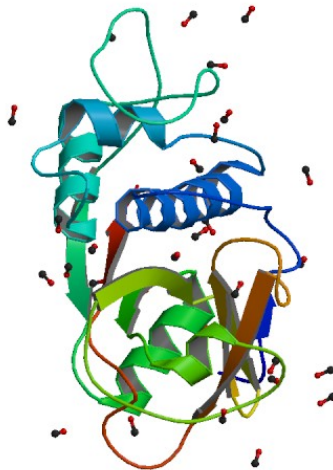
Papaya plantation



Papaya flower



Papain enzyme



Papaya history

- *Domesticated in southern Mexico in Aztec time*
- *It is still unclear if papaya occurred in south-west Asia before the age of exploration*
- *Culture of wet tropical climate, Brazil is the biggest producer*



Avocado, *Persea americana*

- Representative of Lauraceae family
- Fruits are rich of fats (14%, mostly monounsaturated) and poor of sugars ($< 1\%$)
- Also contain vitamins B (including folate, B₉), A, K and potassium



Avocado biology

- Medium-sized evergreen tree
- Flowers are cross-pollinated, there are morning-female (A) and day-female (B) races
- Cultivars are mostly propagated by grafting
- Seeds are easy to germinate



Avocado tree



Avocado flowers



Avocado seedling



Avocado history

- Domesticated in Central America (Mayan civilization)
- Spread in many other places, including California
- Was first fruit of aircraft delivery
- Mexico and China are now biggest producers



Passion fruit, *Passiflora edulis*

- *Other names: maracuja, granadilla*
- *Belongs to Passifloraceae family and passionflower genus, Passiflora*
- *Amazingly complex flower structure*



Passionflower



Passionfruit



Passion fruit features

- *Perennial vine, flowering twice a year*
- *Pollinated with birds and big insects*
- *Extremely rich of vitamin C*



Litchi, lychee, *Litchi sinensis*

- Evergreen tree from Sapindaceae family
- Old traditional Chinese culture, cultivation started 2,000 BC



Litchi



Litchi seeds



Litchi features

- Edible part of litchi fruit is seed aril (seed attachment)
- Contain significant amounts of minerals like phosphorous and copper
- Mycorrhizal tree
- Fruits are canned for transportation



Durian, *Durio* spp.

- Several cultivated species, representatives of Malvaceae family
- Large size, unique odor and thorned fruit surface
- “King of the fruits”
- Odor is unusual, it is the reason why durian is banned, e.g., in public transportation. “Smell evokes reactions from deep appreciation to intense disgust, and has been described variously as almonds, rotten onions, turpentine and gym socks”...



Durian



Durian tree



Durian features

- Large tropical trees, fruits may be dangerous because they heavy, thorned and located very high
- Fruit content is rich of carbohydrates and fats
- Originated in Indonesia and became popular in Europe only in XX century



Eating durian



Carambola, starfruit, bilimbi *Averrhoa carambola*

- Tree native to Philippines
- Belongs to Oxalidaceae family
- Tree of tropical wet forests



Starfruit



Carambola features

- Harvested year round
- Fruits are rich of water, vitamin C and oxalic acid (family character)
- Contains antioxidants



Guava, *Psidium* spp.

- Representative of Myrtaceae, the family rich of useful species with medicine and other values
- All parts of plant contain essential oils
- More than 100 species, all are edible, some are cultivated (like *Psidium guajava*)



Guava flowers



Guava fruits



Guava features

- Originated in Central America
- Fruits contain up to 12% of sugars, diverse minerals (e.g., iron), many pectins
- In India, often consumed with salt



Summary

- Multiple tropical fruits are mostly sources of vitamin C
- Many traditional Asian fruit cultures have also a medicinal value



For Further Reading



A. Shipunov.

Ethnobotany [Electronic resource].

2011—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_310

