

Ethnobotany. Lecture 21

Alexey Shipunov

Minot State University

March 9th, 2011

Outline

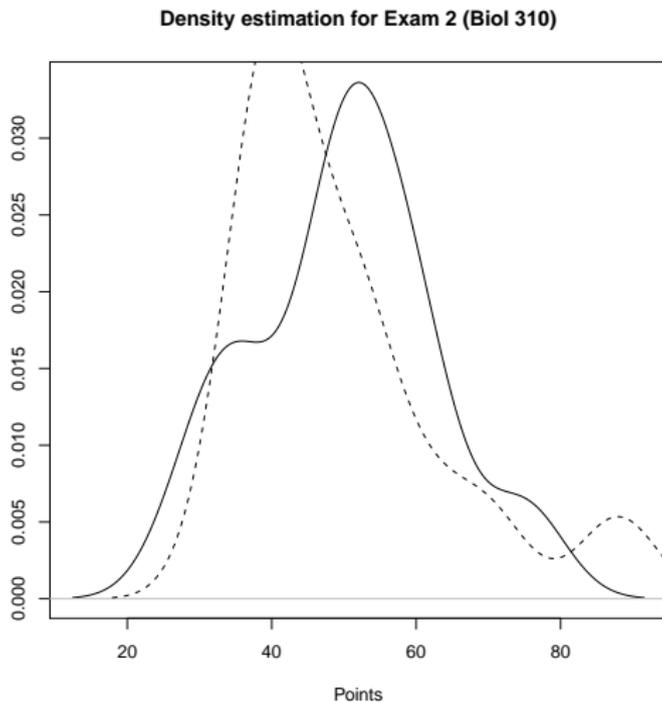
1 Questions and answers

2 Subtropical fruits

Outline

- 1 Questions and answers
- 2 Subtropical fruits

Exam 2 distribution



Exam 2 notes

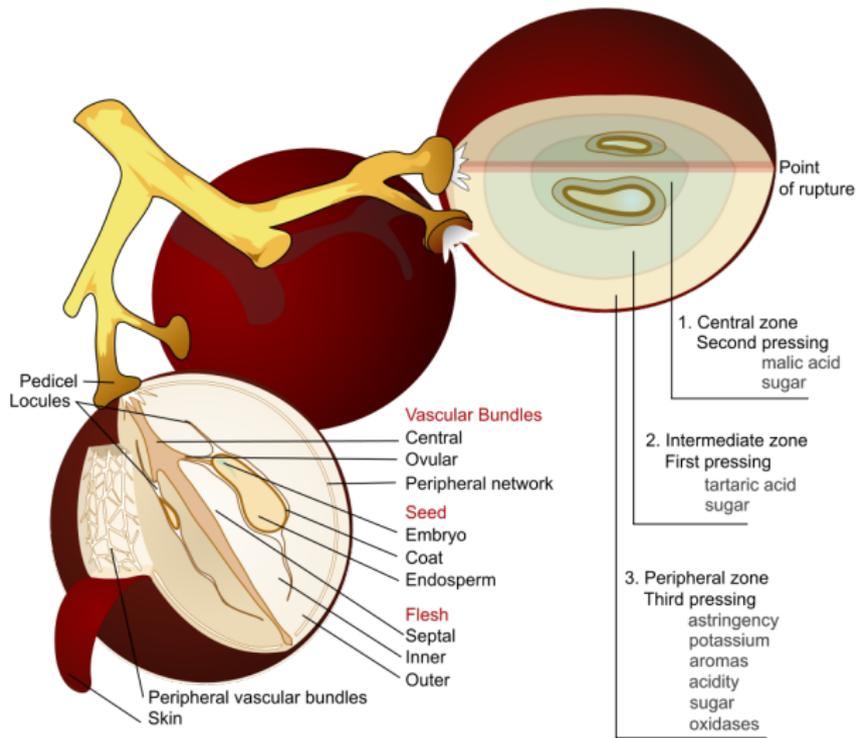
Grape, *Vitis vinifera*

- Belongs to grape family, Vitaceae
- Genus has 70 species, only several are cultivated

Grape biology and agriculture

- Woody vine with tendrils (modified shoots) and palmately lobed leaves
- Agriculture always depend on local climatic conditions
- Forming and cutting are two extremely important techniques

Grape



Grape history

- Central Asian center of origin, cultivated from 4,000 BC
- In Europe, culture flourished in XVII–XVIII centuries
- Used for wine, glucose sugar (raisins) and oil

Persimmon, *Diospiros kaki*

- Belongs to mostly tropical blackwood family, Ebenaceae
- Large genus (200) but only one deciduous species cultivated

Persimmons



Persimmon features and history

- Originates in China
- Fruits are rich of microelements and carotens
- Used also as dry fruit and in eastern medicine; wood is widely used for furniture

Persimmon tree in Japan



Pomegranate, *Punica granatum*

- Belongs to Lythraceae family, genus has only 2 species
- Semi-evergreen shrub

Pomegranate features and history

- The edible parts of fruit are seed arils (similar to litchi)
- Old Mediterranean culture
- Trees are flowering from 2nd year
- One of the most reach of biologically active compounds fruit: contain ellagitannins, punicalagins, polyphenolic catechins, gallocatechins and anthocyanins. They reduce heart disease risks, oxidation, stimulate digestion and immune system.

Pomegranate flower



Date palm, *Phoenix dactylifera*

- Belongs to palm family, Palmae; genus with several species which are cultivated mostly as ornamental palms
- Plant of multiple use: everything, from roots to dry stems, are used

Date palm



Date palm biology and agriculture

- Extremely tolerant to heat, may grow with temperatures above 50°C
- Does not tolerate precipitation; water is normally taken only from deeper soil layers
- Propagated with subsidiary shoots (grow faster than seeds)

Date palm history

- One of the oldest cultivated plants
- Dry fruits are the main food source in North Africa; ≈ 300 kcal per 100 g (highest among all fruits)
- Dates are rich of minerals, especially potassium, sodium and calcium

Fig tree, *Ficus carica*

- Belongs to mulberry family, Moraceae, and to one of the largest flowering plant genus, *Ficus* ($\approx 1,000$ species)
- One of the rare deciduous *Ficus*

Fig inflorescence



Fig tree biology and agriculture

- Edible part of fruit is the axis of inflorescence (not unlike pineapple)
- Have extremely complicated pollination system, including plants with sterile figs (caprifigs), fertile figs and fig wasps

Fig pollination

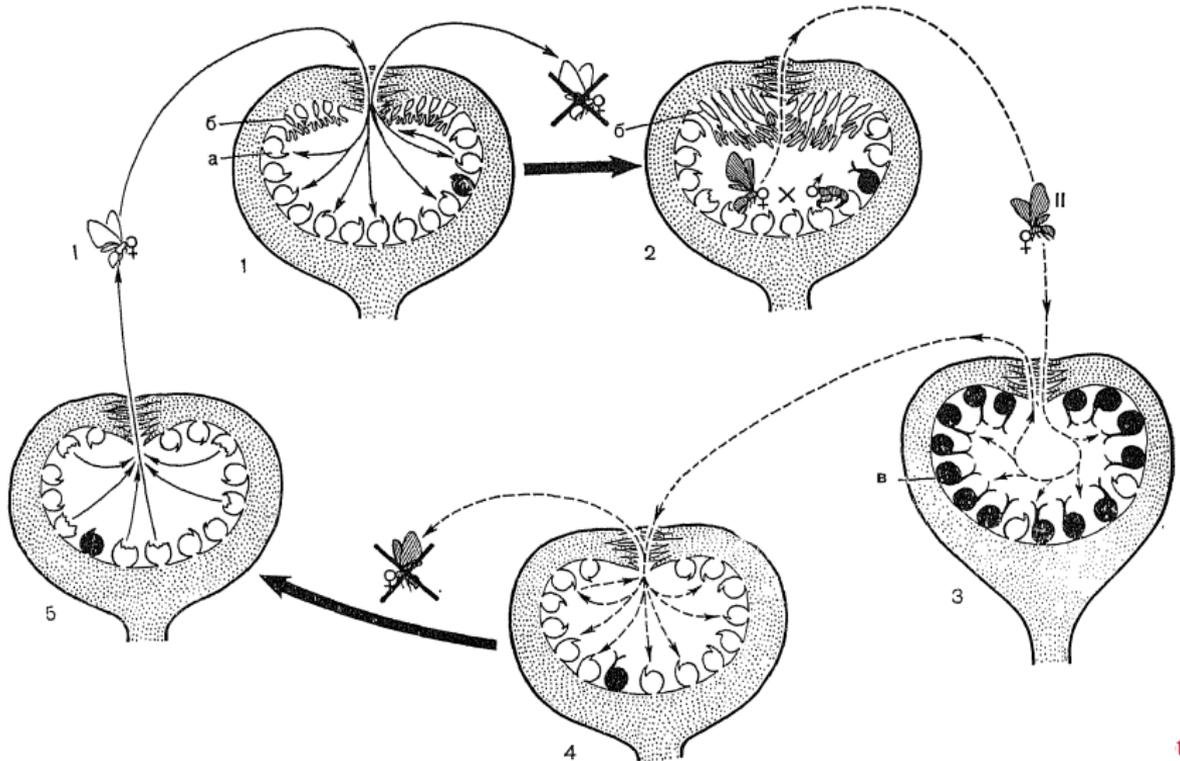


Fig wasps movie

Fig tree history

- Cultivated from Old Testament times in West Asian center
- “carica” is from “Caria”, the region in contemporary Turkey

Accursed fig tree (Tissot, illustrations for New Testament)



Mulberry, *Morus* spp.

- Same mulberry family, Moraceae
- Several species are cultivated: black (*Morus nigra*), white (*M. alba*) and red (*M. rubra*)
- Occurs both in Eurasia and North America

Mulberry



Mulberry features and history

- Deciduous trees, with compact raspberry-like inflorescences
- Infructescences are rich of sugars ($\approx 22\%$), used raw, for wine, syrups etc.
- White mulberry is the feeding plant of silkworm, *Bombyx mori*

Silkworms on mulberry leaves



Cocoons



Kiwifruit, *Actinidia chinensis*

- Belong to Actinidiaceae family, genus contains ≈ 40 species
- Woody vines, cultivated mostly as ornamentals

Kiwifruit flowers



Kiwifruit biology and agriculture

- Dioecious, fast-growing plant
- Biggest problem is pollination (need saturated pollination)
- Fruits rich of sugars, pectins, organic acid and enzyme actinidin (analog of papain and bromelain)

Kiwifruit history

- In China, was cultivated as ornamental
- After 30 years of intensive selection (started in 1904), New Zealand invented the kiwi fruit

Summary

- Many subtropical fruits are traditional old cultures from West or Central Asia

For Further Reading



A. Shipunov.

Ethnobotany [Electronic resource]. 2011—onwards.

Mode of access:

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



P. M. Zhukovskij.

Cultivated plants and their wild relatives [Electronic resource].

Commonwealth Agricultural Bureaux, 1962.

Mode of access:

[http://ashipunov.info/shipunov/school/biol_310/
zhukovskij1962_cultivated_plants.pdf](http://ashipunov.info/shipunov/school/biol_310/zhukovskij1962_cultivated_plants.pdf)

Pages 28–74 (fruits).