

Ethnobotany. Lecture 11

Alexey Shipunov

Minot State University

February 9th, 2011

Outline

1 Exam 1

2 Oil plants

- Olive, *Olea europaea*
- Sesame, *Sesamum indicum*

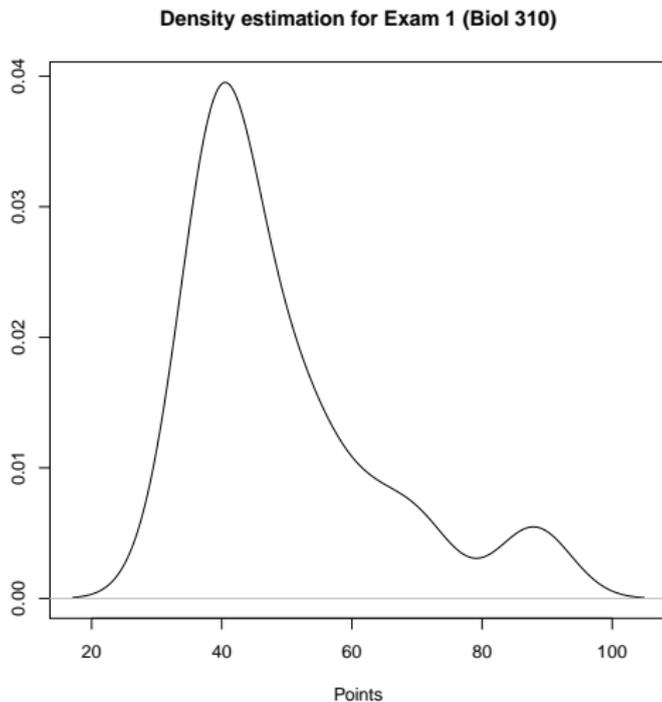
Outline

1 Exam 1

2 Oil plants

- Olive, *Olea europaea*
- Sesame, *Sesamum indicum*

Grading the curve



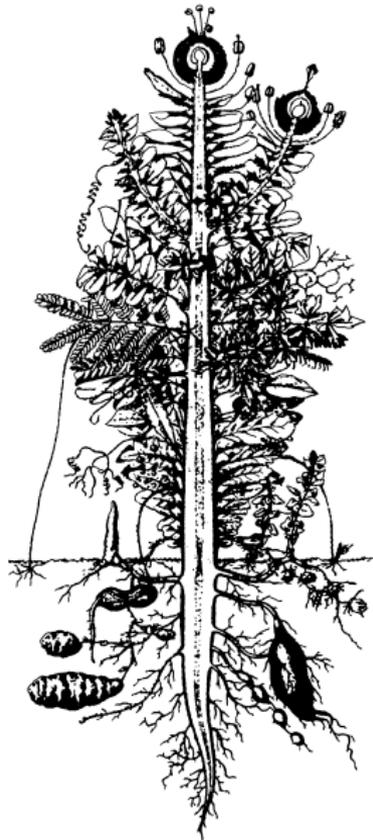
3. Is it possible to suggest medicinal use of plant from the drawing?
- A. Yes
 - B. No
 - C. **Yes, but only if the plant is extremely similar to other plant with well-known medicinal value**

13. Indian rice, *Zizania*:

- A. Was cultivated by native tribes
- B. **Was only protected from insects and birds**
- C. Was only harvested

30. What Vavilov (1926) said about hemp cultivation?
- A. **It was started independently in several places**
 - B. It was started in Nile valley (ancient Egypt)
 - C. It was started in Afghanistan

Urpflanze



- Mark (use numbers) on the map as many centers from Zhukovsky classification as you can remember (there are 12). Then, for every center list as many plants from studied groups as possible

- Why people use grafting for the propagation of many cultivated plants?

- Why some plants keep carbohydrates as sweet disaccharides and not as starch or inulin?

- Please describe in several sentences how Vavilov discovered centers of cultivated plants origin

Olive, *Olea europaea*

- One of the oldest oil plants, also used as vegetable
- Belongs to olive family, Oleaceae
- Relatively hardy plant despite of evergreen life form

Olive biology

- Evergreen, long-lived (up to 2,000 years), small tree
- Starts to produce fruits from 3–4 year (when grafted)
- Cross-pollinated with wind
- Oil does not contain omega-n-unsaturated fatty acids

Olives in Greece



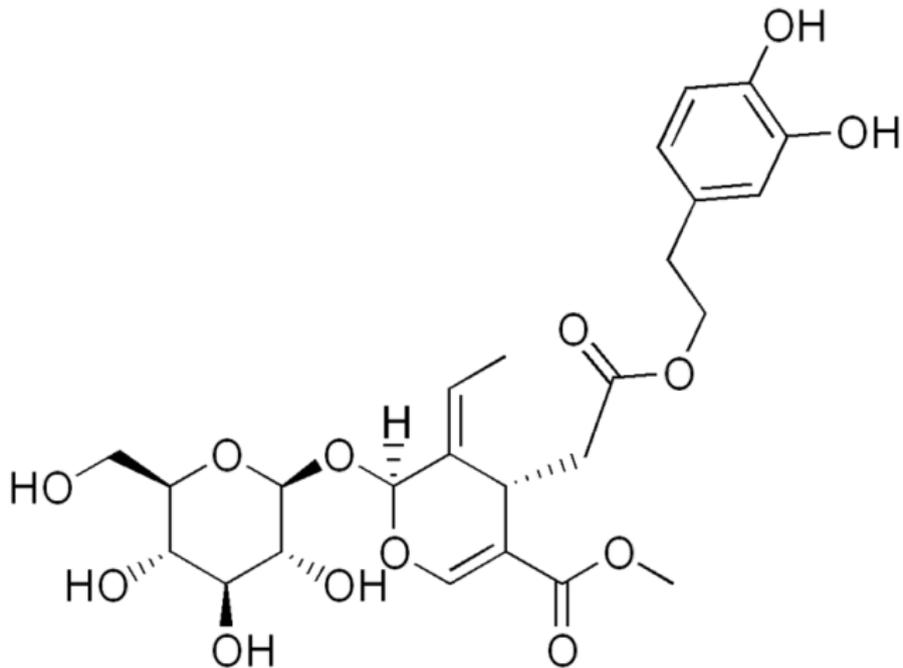
Olive agriculture

- Requires dry air and lots of sun, does not particular to soils (but grows better on limestone soils)
- One tree may produce ≈ 20 kg of fruits per year for 200 years
- Harvested in winter, half-manually, by shaking trees
- Oil is pressed, outer parts are fermented to remove bitter *oleuropein*

Olive harvesting



Oleuropein



Olive history

- Large historical and mythological background: from Old Testament and Greek mythology to Quran
- Cultivation started > 6,000 BC in Mediterranean
- More than 500 cultivars; top producers are Spain, Italy and Greece
- Olive became invasive in Australia

Sesame, *Sesamum indicum*

- Belongs to the tropical genus *Sesamum* (≈ 20 species) from sesame family, Pedaliaceae
- The oldest cultivated oil plant

Sesame



Sesame features

- Tropical herbaceous annual plant, vegetation 3–4 month, yield is 1–2 tons/hectare
- Seeds contain 50-65% of oil; oil contains phytosterols, vitamin E and significant amounts of microelements, especially iron and magnesium
- Can grow in dry climatic zones
- Used entirely (green mass as a forage, pressed cakes in bakery etc.)

Fruits and deeds of sesame



Sesame history

- Cultivation started in India prehistorically, went to ancient Egypt and then to Europe
- Now cultivated mostly in tropics around the world
- Biggest producers are still India and China
- Famous also after Ali-Baba story from “One thousand and one nights”

Ali-Baba (40 thieves are not at home yet)



Summary

- Names of flower female part (gynoecium): pistil, ovary, style, stigma, ovule (future seed), pistil wall (future pericarp)
- Evergreen plants do not survive in winters because (a) water in cytoplasm form big crystals and (b) because leaves are still transpire water whereas roots cannot take it from frozen soil

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 16–23.