

Ethnobotany. Lecture 2

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Outline

- 1 Ethnobotany
 - Classification
- 2 Main food source plants: grains
 - Introduction to grasses



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Homework

- Choose **3** plants from the project guidelines
- Create your 6-digit class ID



Reference books

Several reference texts will be available on-line. Another reference (Heinrich et al. 2012. Fundamentals of Pharmacognosy and Phytotherapy) covers the pharmacognosy part of course. For the basic knowledge of botany, the on-line textbook “Introduction to Botany” (draft) is available.



Ethnobotany

Classification



Subspecies, varieties and cultivars

- Subspecies is in essence the geographic race. Example: stinging nettle in Eurasia and North America, latter is *Urtica dioica* subsp. *gracilis*
- Variety is any distinguishable local variation. Example: bigger plantain with branched inflorescence, *Plantago major* var. *paniculata*
- Cultivar is a stable cultivated variety. Example: yellow roses, *Rosa banksiae* cv. 'Lutea'



Subspecies, varieties and cultivars

- Names of species and subspecies should be *italicized*.
- Genus name, first word of species name and cultivar name should be uppercased, others—lowercased.
- Binary species names are not perfect IDs because they change every time we change genus for the particular species.
- Programmers came up with UUID solution (like “urn:lsid:ipni.org:names:321286-2” for *Plantago major*), but these UUIDs are unfortunately not human-readable.



Taxonomic framework for cultivated plants

- All plants belong to its own kingdom, Vegetabilia.
- Most of cultivated plants are angiosperms (flowering plants, Angiospermae).
- In most cases, we will need to **memorize the family** of plant. This is important characteristic since families are stable natural units of common evolutionary origin.
- Families were first established by practical botanists, and proved to me extremely stable taxonomic groups, even when molecular tools came to science



Folk classification

- Folk classification is an ancient approach to plant diversity
- Folk taxonomic groups are created artificially, mainly for practical use (like “edible”/“non-edible”)
- Typically, plant in folk classification belongs to so-called “genus-species” and then to bigger group. As an example, “raspberry” is genus-species and it in turn belong to “berries”. In science, raspberry is a groups of species in genus *Rubus* which belongs to Rosaceae family.



Artificial classification of plant uses

This artificial classification will serve as a course plan:

- 1 **Main** plants (most important food sources): grains, starch-containing, legumes
- 2 **Sugar and oil** plants
- 3 **Fruits and vegetables**: fruits, vegetables, nuts
- 4 **Technical**: fiber, wood, latex, dye, feeding
- 5 **Aromatic and psychoactive**: spices, stimulating, narcotic
- 6 **Medicinal**: vitamin, ethereal oil, glycoside, alkaloid etc.
- 7 **Ornamental**: outdoor annuals, perennials, trees and shrubs, cut plants, indoor pot plants



Main food source plants: grains

Introduction to grasses



Grasses (Gramineae, or Poaceae)

- One of the biggest family of flowering plants
- Grasses (except bamboos)
- Hollow stems
- No main root, underground rhizomes form tussocks
- Compound inflorescences
- Simplified, wind-pollinated flowers
- Fruit is *caryopsis*, seeds should be *threshed* from fruits



Groups inside a family

- C₃ grasses—bamboos, wheat (*Triticum*), rye (*Secale*), barley (*Hordeum*), rice (*Oryza*), indian rice (*Zizania*), oat (*Avena*)
- C₄ grasses—corn (*Zea*), sugar cane (*Saccharum*), sorghum (*Sorghum*), millet (*Panicum*)



C₃ and C₄ plants

- C₃ plants have photosynthesis effective when temperatures are “cool”, below 24° C; if temperature increases, photorespiration makes photosynthesis ineffective
- C₄ plants show much better results growing on temperatures higher than 24° C; they are best suited for tropics



Summary

- In the ethnobotany course, we will approach plants in accordance with artificial classification of plant uses



For Further Reading



A. Shipunov.

Ethnobotany [Electronic resource].

2011—onwards.

Mode of access:

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

