

# Ethnobotany. Lecture 36

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May 2nd, 2011

# Outline

- 1 Harmful plants
- 2 Technical plants

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- 2 Technical plants

# Stinging plants

- Covered with “glassy”, silica-tipped hairs (like , sometimes containing acetylcholine, histamine, serotonin, formic acid (like in nettle, *Urtica* spp., Urticaceae) or even stronger toxins (like giant stinging tree, *Dendrocnide excelsa*, same family, from Australia)
- Plants from other families like Loasaceae (*Eucnide*, desert rock nettle), Euphorbiaceae (*Cnidoscolus*, spurge nettle) and even Leguminosae (*Mucuna*, velvet beans) are similar to nettles.

# Nettle stinging hairs



# Giant stinging tree



# Giant stinging tree leaves



# Desert rock nettle





# Spurge nettle



# Velvet beans



# Poisonous plants

- Allergic like poison ivy (*Toxicodendron radicans* from Anacardiaceae, rich of urushiol)
- Phototoxic like giant hogweed (*Heracleum* spp. from Umbelliferae)
- Digestively poisonous like *Strychnos* from Loganiaceae (source of curare), rosary pea *Abrus precatorius* (Leguminosae, contain abrin protein toxin which deactivates 26S RNA), and most poisonous U.S. plant water hemlock (*Cicuta* spp., Umbelliferae, contains terpene cicutoxin which blocks GABA receptors)
- Almost all Solanaceae and Ranunculaceae are poisonous

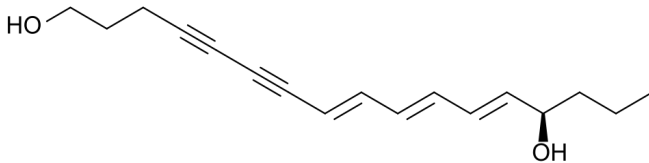
# Rosary pea



# Water hemlock



# Cicutoxin



# Parasitic plants

- Half-parasites (like *Comandra*, bastard toad-flax or mistletoe) have chlorophyll, mycoparasites (like *Pterospora*) interact with fungi
- Full parasites may be root (like *Pholisma*), stem (like dodders) or internal (only flowers will appear on surface, like *Pilosyles*)
- Stem parasites dodder (*Cuscuta* spp., Convolvulaceae) and *Cassytha* (Lauraceae) are harmful for many cultivated plants, especially from legume and aster families

# Bastard toadflax





# *Pterospora*



# *Pholisma*



# Pilostyles



# Dodder



# *Cassytha*



# Weeds

- Plants which interfere in agro-ecosystems
- In North Dakota, most noxious native weeds are common ragweed (*Ambrosia artemisiifolia* from Compositae) and different milkweeds (*Asclepias* spp. from Apocynaceae); first is also highly allergic, seconds are poisonous.

# Common ragweed





# Milkweed





# Invasive plants

- Invasive plants are normally not harmful in their native range, but in exotica range they start to spread uncontrollably
- Nice reciprocal examples are spotted knapweed (*Centaurea stoebe*) and boxelder (*Acer negundo*) in Eurasia and North America
- Leafy spurge (*Euphorbia esula*) is the most problematic invasive plant in North Dakota
- Despite of numerous hypotheses formulated, the reason of invasiveness is still not known

# Invasive vs. native knapweed



# Forage plants

- Need to contain balanced diet: not only carbohydrates, but also proteins, fats and vitamins
- Most important are different Gramineae (like oats, corn and sorghum) and Leguminosae (like clovers, vetches and alfalfa)
- Green parts of grasses are most often used as silage—fermented (with *Lactobacillus plantarum*) cellulose

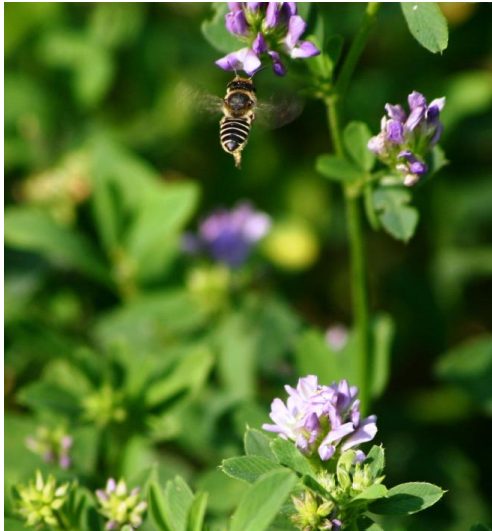
# Silage



# Alfalfa, *Medicago sativa*, Leguminosae, Eurasia

- Root nodules contain nitrogen-fixing bacteria, providing plant with nitrogen
- Up to 12 harvests a year
- High in proteins, vitamins C, K, E and some B

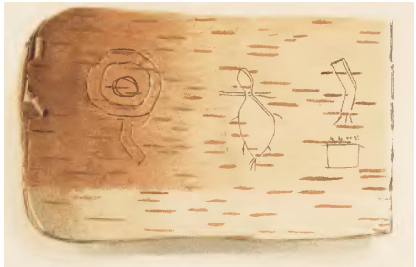
# Alfalfa pollination



# Lumber, paper and basket plants

- Mostly trees which give hardwood (rosids/asterids) and softwood (conifers)
- For the paper, birch (*Betula* spp.) bark was used by ancient Russians and Ojibwe people (“Wiigwaasabak”), papyrus sedge (*Cyperus papyrus*, Cyperaceae) was used in ancient Egypt, and pulpwood is used now
- For baskets and similar things (like bast shoes), gourd (*Lagenaria* spp.) fruits, birch and linden (*Tilia* spp.) bark and willow (*Salix* spp.) twigs were used most frequently in our latitudes

# Russian and Ojibwe bark documents





# Bast shoes



# Baskets



# Hybrid poplar, *Populus deltoides* hybrids, Salicaceae, North America

- Sometimes referred as *Populus* × *euroamericana*
- One of the fastest growing trees
- Accept wide range of soils, but require moist habitats, with high water level in soil
- Used for making pulpwood

# Hybrid poplar plantation



# Fiber plants

- Normally, bast (phloem) is used for fibers
- Most important stem fibers are flax (*Linum usitatissimum*), jute (*Corchorus* spp., Malvaceae, South Asia) and hemp (*Cannabis sativa*); fruit fibers are cotton, coir (outer part of coconut, *Cocos nucifera*) and kapok (*Ceiba pentandra*, Malvaceae, Central America); leaf fibers are abaka (*Musa textilis*, Musaceae, Philippines), sisal (*Agave sisalana*, Asparagaceae, Mexico), snake plant (*Sansevieria* spp., Asparagaceae, Africa) and New Zealand flax (*Phormium tenax*, Xanthorrhoeaceae)
- Native Americans used “Indian hemp” (*Apocynum cannabinum*) stems

# Summary

- Main groups of harmful plants: prickly, stinging, poisonous, parasitic, weed/invasive
- Main groups of technical plants: forage, wood, fiber, dye, latex, incense

# For Further Reading



A. Shipunov.

*Ethnobotany* [Electronic resource]. 2011—onwards.

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