

Systematic Botany. Lecture 13

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Outline

Questions and answers

Grass-like plants

Gramineae, or Poaceae—grass family

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Grass-like plants

Gramineae, or Poaceae—grass family

Previous final question: the answer

How Pinaceae differs from Cupressaceae?

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How Pinaceae differs from Cupressaceae?

- ▶ Smaller seed scales which did not fused with bract scales
- ▶ Saccate pollen
- ▶ Brachyblasts, leaves are not dimorphic, not scale-like and not opposite

Graminioid syndrome: discussion

Graminioid families

- ▶ Gramineae
- ▶ Cyperaceae
- ▶ Juncaceae
- ▶ And also Restionaceae, Ecdeiocoleaceae, Joinvilleaceae, Flagellariaceae, Mapaniaceae, Typhaceae

Gramineae, or Poaceae—grass family

- ▶ $\approx 8,000$ species distributed thorough all the world, but most genera concentrate in tropics
- ▶ Prefer dry, sunny places
- ▶ Often form tussocks—compact structures where old grass stems, rhizomes and roots are intermixed
- ▶ Grasses form grasslands—specific ecological communities widely represented on Earth. North Dakota prairies are grasslands.

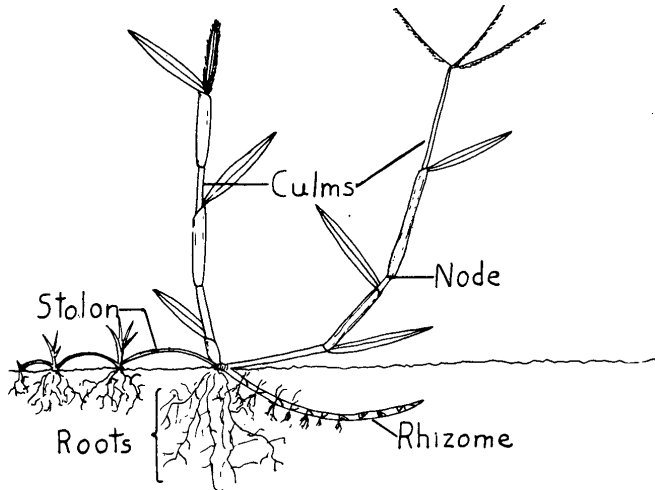
Morphology of grasses

- ▶ Stems usually hollow and round
- ▶ Leaves flat, in two ranks
- ▶ Flowers reduced, wind-pollinated, usually bisexual, form complicated spikelets
- ▶ Each spikelet bear two glumes; each flower has lemma and palea scales
- ▶ Perianth is reduced to lodicules
- ▶ Stamens from 6 to 1 (most often 3), with large anthers
- ▶ Fruit is a caryopsis, it includes flower scales
- ▶ Seed has a specific embryo with coleoptile, coleorhiza and scutellum

└ Grass-like plants

└ Gramineae, or Poaceae—grass family

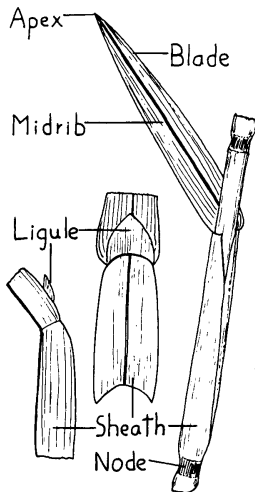
Grass branching



└ Grass-like plants

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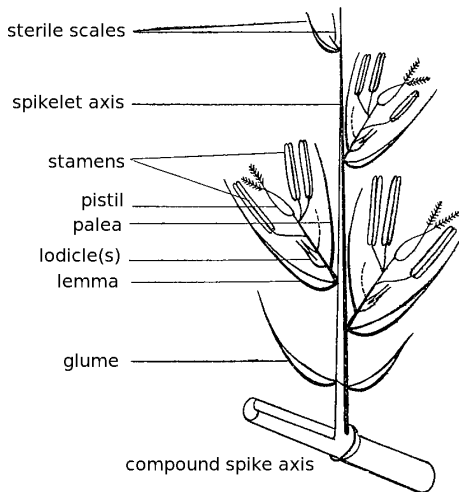
Grass leaves



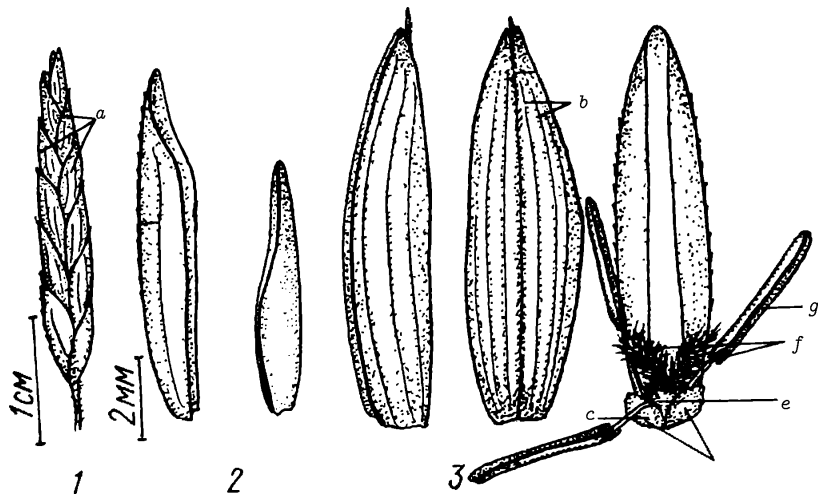
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Scheme of grass spikelet

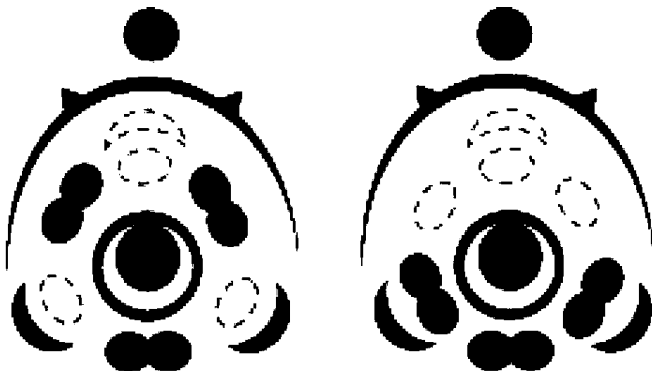


Bromegrass (*Bromus inermis*) spikelet and flower

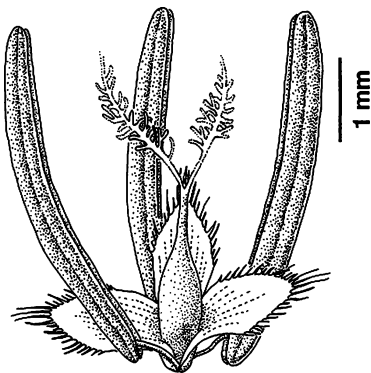


- └ Grass-like plants
- └ Gramineae, or Poaceae—grass family

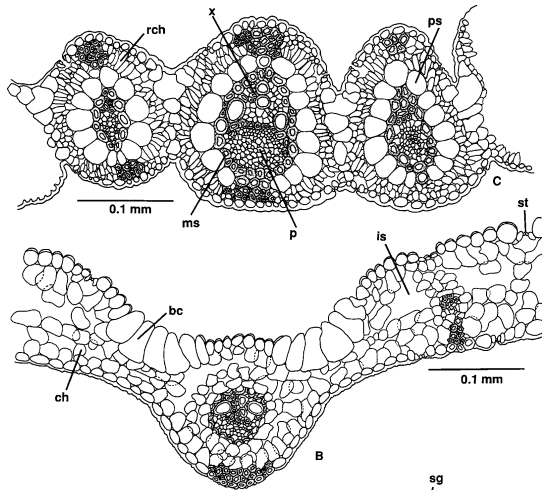
Grass flower origin



Grass flower: bamboo



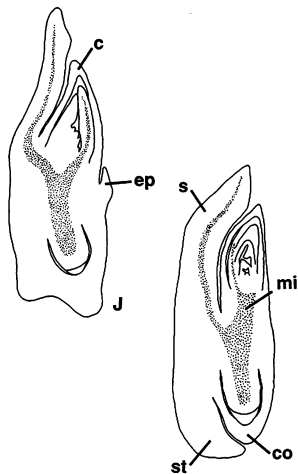
Kranz anatomy of leaves in C₄ grasses (above)

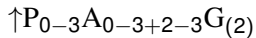


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Grass embryo





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Grass inflorescences

- ▶ Compound spikes
- ▶ Panicles

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Rare event: bamboo (*Schizostachyum* sp.) is flowering!



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Festuca sp.



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Rice (*Oryza sativa*), the most important world crop



Corn (*Zea mays*), the most productive world crop (up to 10 MT/ha)



Final question (2 points)

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Why the grass embryo is unique?

For Further Reading



O. A.Stevens.

Handbook of North Dakota plants. 3rd edition.

NDSU, 1963.