

FTY 111/112 - Forests Through Time:

Tree and Plant Biology

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Readings& Web Sites:

1. Pages 11-12, 37-38, 44-46, 270-274, 439-441 in Kricher, J.C. 1988. A Field Guide to Eastern Forests, North America. Houghton Mifflin Co., NY. 488 p.
2. Pages 9, 20-65, 70-75, 86-93, 104-105, 108-109, 128-129 in Maine Forest Service. 2008. Forest Trees of Maine. Department of Conservation, Augusta. 176 p.
3. American Fern Society. A Brief Introduction to Ferns.
<http://www.amerfernsoc.org/lernfrnl.html>
4. Wikipedia: <http://en.wikipedia.org/wiki/Moss> and <http://en.wikipedia.org/wiki/Leaves>

I. Introduction to Plants

- A. Have a cell wall
- B. Forms specialized cells and tissues
- C. Gets:
 - D. Nutrients by absorption from the soil
 - E. Reproduction
 - F. 90% of a forest consists of plants!

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G. Shade tolerance

II. Structure

A. Primary growth

1. Buds

2. Vascular tissue

3. Epidermis

4. Leaves

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III. Secondary growth

- A. Vascular cambium
- B. Annual growth of xylem – rings

C. Phloem and bark

D. Roots

1. Functions

2. Tips differ from stem

3. Secondary growth similar to stem

IV. Conifers

A. Has cones for seeds, not flowers

1. Male cones have pollen

2. Female cones have seeds

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B. Needles in bundles

C. Needles single

1. Flat

2. Square

V. Flowering Plants: Hardwoods

A. Flowers male and female parts together or separate

1. Male: Stamens with pollen

2. Female: Pistil

B. Leaves

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C. Bark

D. Buds

E. Grouped by Genus

F. (*Populus*)

1. Leaves

2. Bark

3. Shade intolerant

G. Birches (*Betula*)

1. Leaves

2. Bark

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3. Shade intolerant or shade tolerant.
- H. Beech (*Fagus*)
1. Leaves

2. Buds

3. Bark

4. Very shade tolerant.

- I. Oaks (*Quercus*)
1. Leaves

2. Bark

3. Buds

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VI. Conclusion

- A. Plants make up 90% of the ecosystem
 - 1. Photosynthesis
 - 2. Nutrient uptake
- B. Major groups
 - 1. Spores - Mosses and ferns
 - 2. Seeds - Conifers and Flowers (hardwoods)
- C. Conifers: Pines, larch, hemlock, fir, spruce
- D. Hardwoods: Poplars, birches, beech, oaks, maples, ashes.

Terms	Outer bark	Margin entire or toothed or lobed
	Root hairs	Furrowed
	Roots	Poplars
Photosynthesis	Mycorrhizae	Aspens
Chlorophyll	cones	Birches
Spores	pollen	Beech
Seeds	Male cones	Pocket cankers
Mosses	Female cones	Oaks
Ferns	Seed	Maples
Conifers	Needles in bundles	Ashes
Hardwoods & Flowers	Pines	
Shade tolerance	Larch	
Intolerant	Hemlock	
Intermediate tolerance	Balsam fir	
Shade tolerant	Spruce	
Primary growth	Stamens	
Buds	Wind pollinated	
Bud scales	insect pollinated	
Apical meristem	nectar	
Vascular tissue	Pistil	
Xylem	fruit	
Phloem	nuts	
Epidermis	fleshy fruits	
Secondary growth	Opposite or alternate	
Vascular cambium	Simple or compound	
rings		
bark		