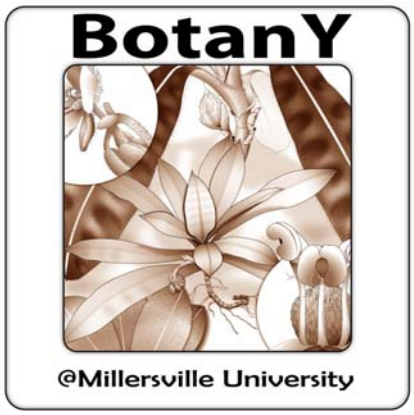
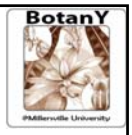
# Topic 03




# Cereals & Legumes (Seeds & Seedlings)

Chap. 22 (Fig. 22-1 & pp. 530-536, including “Wheat: Bread and Bran”)

## I. Seeds & Embryos Intro




### A. Systematics

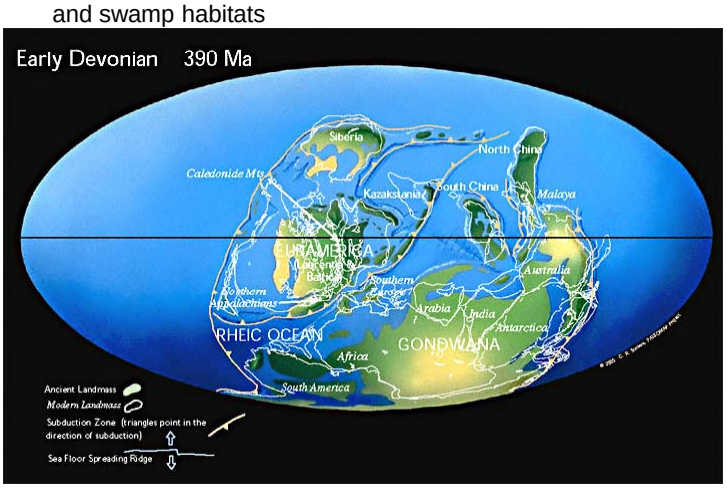
# I. Seeds & Embryos Intro

1. Spermatophytes or Seed Plants
   Angiosperms and Gymnosperms

# I. Seeds & Embryos Intro

2. Before the spermatophytes

Spore-bearing plants and amphibians were dominant in moist shoreline and swamp habitats

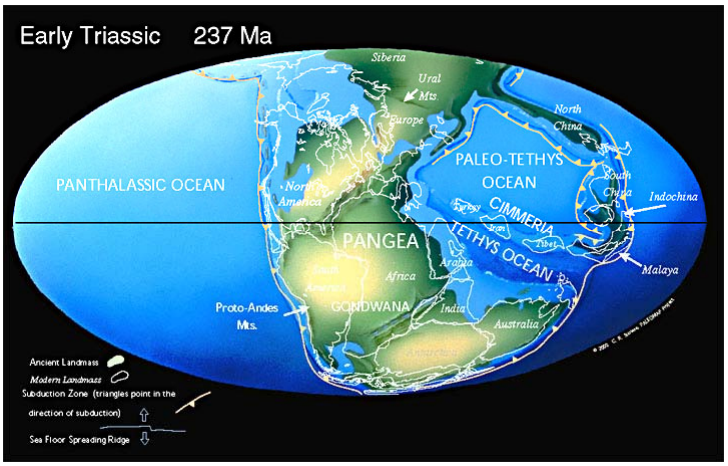


## I. Seeds & Embryos Intro

285-245 Ma

-African-Eurasian collision

-Pangea forms

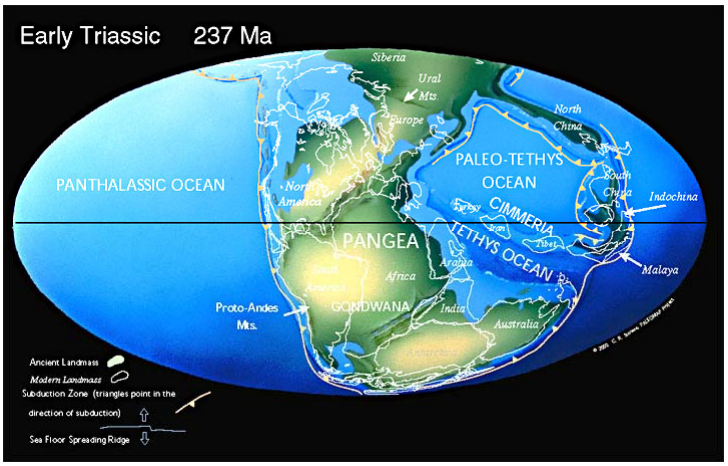



## I. Seeds & Embryos Intro

245-210 Ma

-Mass extinction

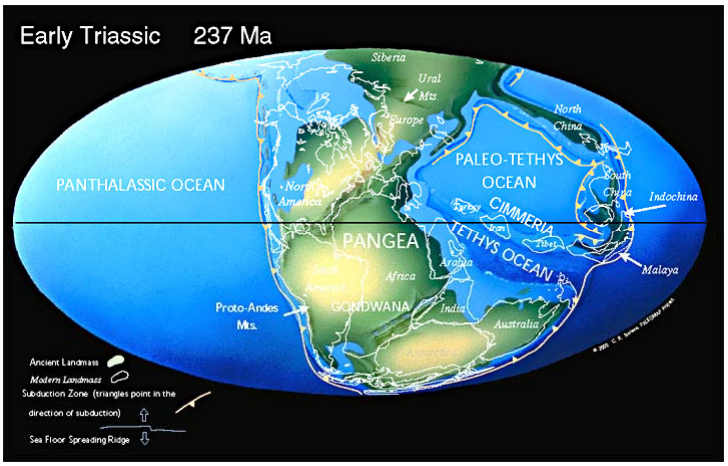
- 90-95% of marine, 70% of land species.
- Perhaps 99.5% of all organisms.



# I. Seeds & Embryos Intro

-Adaptive Radiations following Mass Extinction

•Seed plants & reptiles




# I. Seeds & Embryos Intro

## B. Seed structure & adaptive value

# I. Seeds & Embryos Intro

## C. Dormancy & Germination

After-ripening (cold period)
Imbibition
Germination (radicle first)

# II. Legumes

## A. Economic Botany

| Species (common name) | Native Range, Origin of Domestication |
|---|---|
| *Arachis hypogaea* (peanut) | Brazil, S America |
| *Glycine max* (soy) | E Asia |
| *Lens culinaris* (lentil) | E Mediterranean, SW Asia |
| *Pisum sativa* (pea) | E Mediterranean, SW Asia |
| *Phaseolus lunatus* (Lima bean) | Lima Peru & Vicinity, S America |
| *Phaseolus vulgaris* (common beans) | Central America |

Table B. Legume pulse species discussed in this lab manual and their native ranges.

# II. Legumes

## A. Economic Botany

**Roots have rhizobia bacteria in nodules**
**Seeds rich in aleuroplasts**

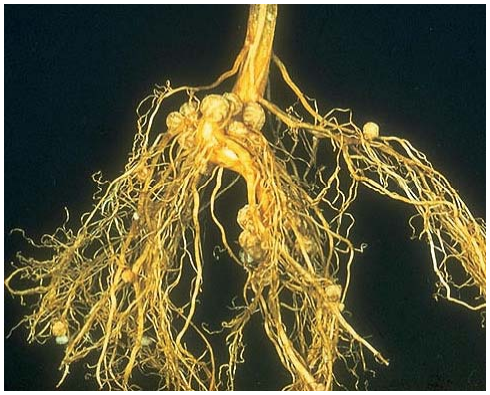


Table B. Legume pulse species discussed in this lab manual and their native ranges.

# II. Legumes

## B. Fruit structure

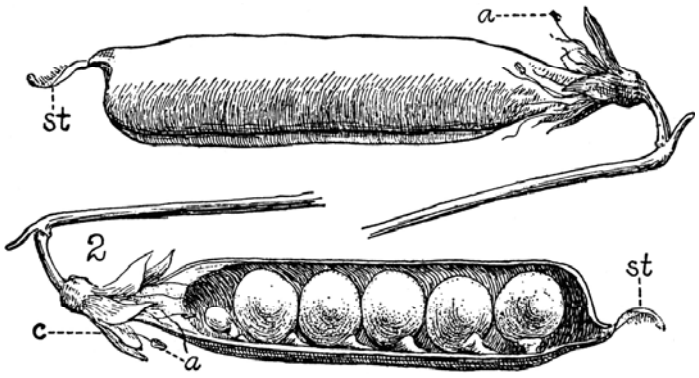


Table B. Legume pulse species discussed in this lab manual and their native ranges.

# II. Legumes

## C. Seed & Seedling Structure

# III. Cereals

## A. Economic Botany

| Species (common name) | Native Range, Origin of Domestication |
|---|---|
| *Avena sativa* (oats) | Europe |
| *Hordeum vulgare* (barley) | SW Asia |
| *Oryza sativa* (common rice) | SE Asia |
| *Triticum aestivum* (bread wheat) | SW Asia |
| *Zea mays* (corn, maize) | Mexico |
| *Zizania aquatica* (wild rice) | North America |

## III. Cereals

### A. Economic Botany

Roots do not have nodules.
Seeds rich in amyloplasts.

## III. Cereals

### B. Fruit, Seed and Seedling Structure