

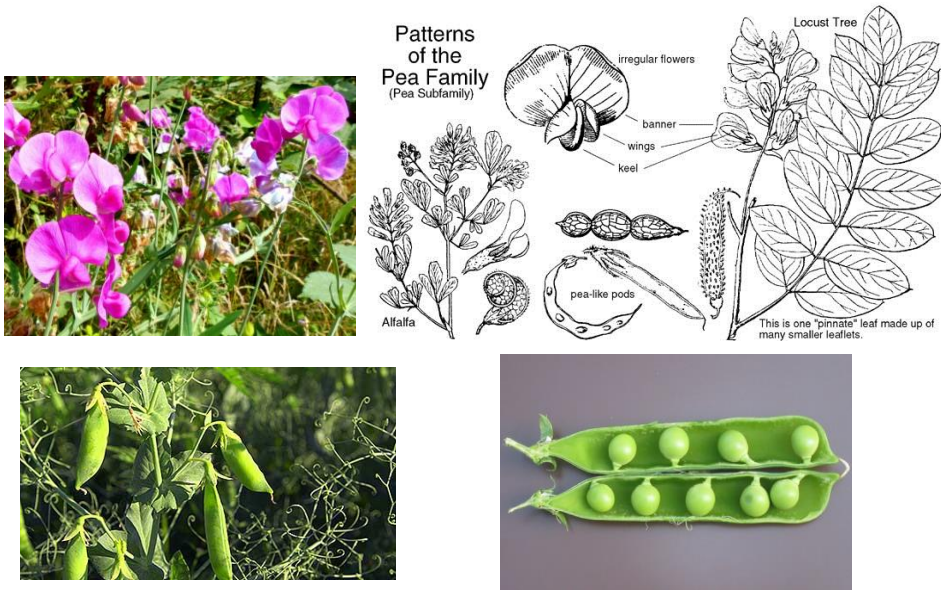
Ch. 13: Legumes



Artistic portrayals

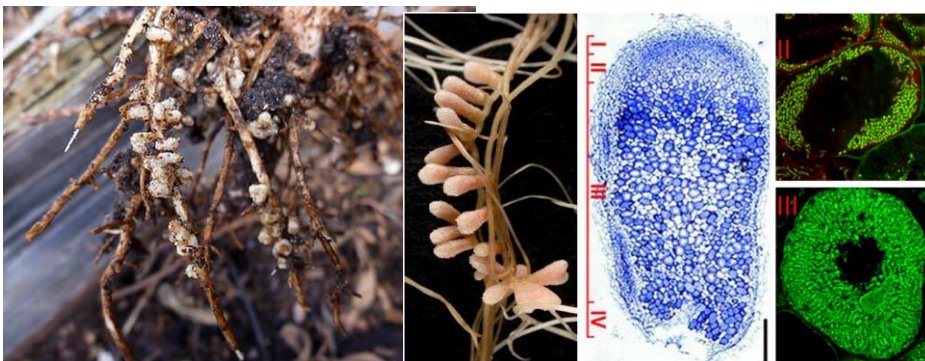


Legumes (Fabaceae) are angiosperms



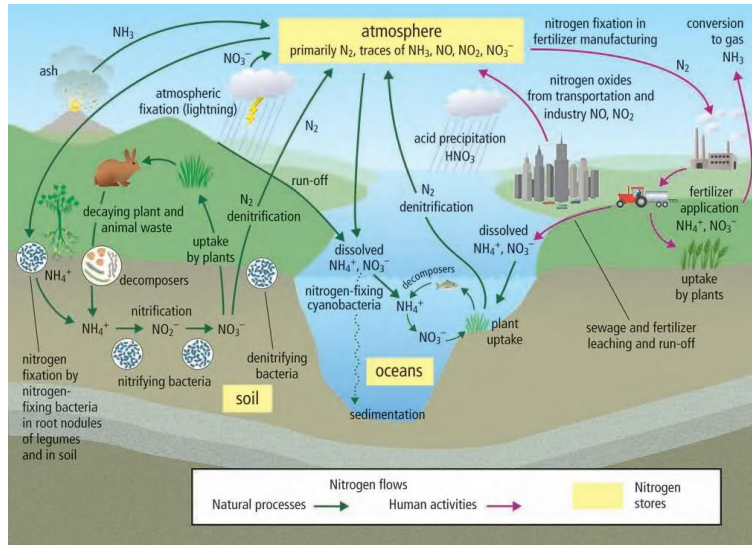
Root nodules house N-fixing bacteria

Bacteria (mainly from genus *Rhizobium*) convert atmospheric nitrogen into ammonium which off-gases into soil; other bacteria “nitrify” ammonium into nitrate or nitrite, which is taken up by plants.



Nitrogen cycle

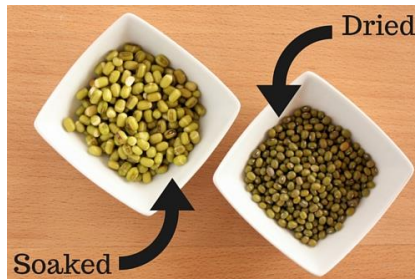
Natural processes and human activity influence nitrogen cycle. There are N stores and N sinks.



Beans and Peas

Some you might know:

Adzuki beans, Anasazi, black-eyed peas, black turtle beans, chickpeas (aka garbanzo beans), green bean, green pea, kidney beans, **lentils**, lima beans, **mung beans**, **navy beans**, pigeon pea, pinto beans, snow peas, split pea, tepary beans



Peanuts

Fruits! Develop underground after pollination/fertilization. Native to northern S. America.



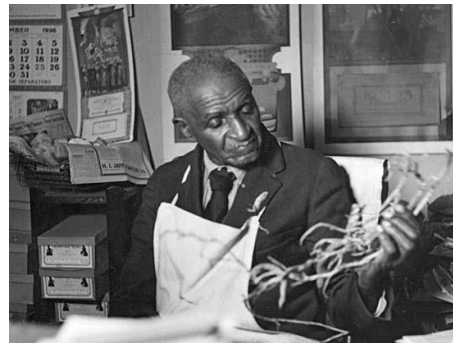
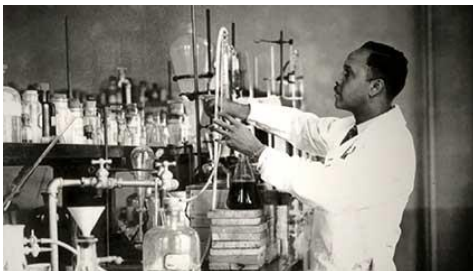
George Washington Carver

Born a slave, 1860s. Died 1/5/1943.

Environmentalist

Promoted alternative crop rotation to cotton in the South (peanuts, sweet potatoes)

Developed first "mobile lab" to take peanuts and sweet potatoes to farmers



Peanuts in America



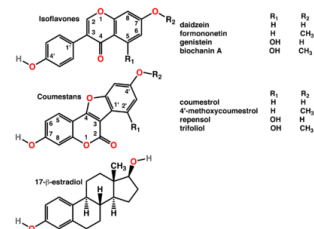
Soybeans

Plt characteristics



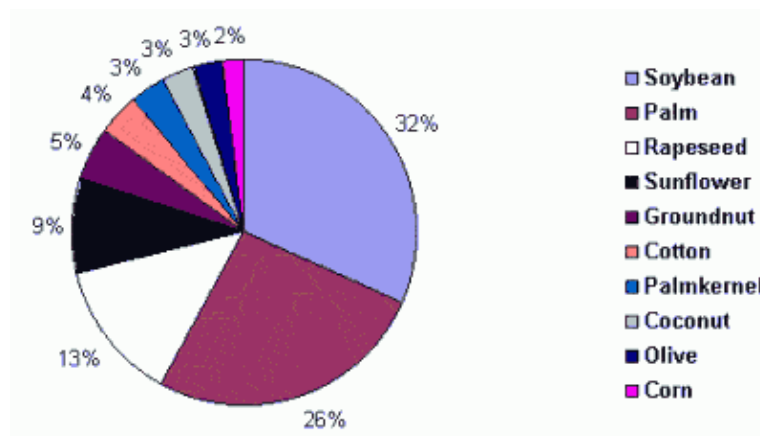
Soybeans

Edemame
Tofu
Soy sauce
Soy milk
Phytoestrogens
Soy ink



Plant oils

oil



Leucaena

New World natives (~24 spp.) Livestock forage

Some are edible

Antiparasitics

Charcoal

Livestock forage

Soil conditioners



Alfalfa

Middle east native

Known to ancient Greeks (after Persian invasions)

Widely used as cover crop

Livestock forage/fodder

Sprouts



Winged bean

New Guinea native

**Entire plant is edible → vit A,
vit C, calcium, iron**

Animal feed



Groundnut

Legume, but tuber is edible part

Potato-like, but high protein

Anti-oxidant properties

Now cultivated in Japan, Korea

**Native Americans shared groundnut with early
settlers/pilgrims to help them avoid starvation**



Jicama

We eat the starchy tuber, but it is a legume

Mexico native; spread to Asia through Philippines, then China and beyond

Mostly fiber and water, also vit C



Other legumes you may know

Carob, copafaira, fenugreek, **indigo**, **licorice**, **mesquite**, rosary pea, rosewood, senna pods, **tamarind**, tuba root

