

# "Introduction to Plants"



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# "Introduction to Plants"

Program:

- General concepts
- Classification of plants
- Parts of the plants
- Plant ecology



# Botany

It's the science that studies plants or vegetables.

## what is a plant or vegetable?

Multicellular organisms, plants are generally green, plants do not consume other organisms, grow and have movement but are not able to move from one place to another.



*Plumeria rubra*

## Concepts:

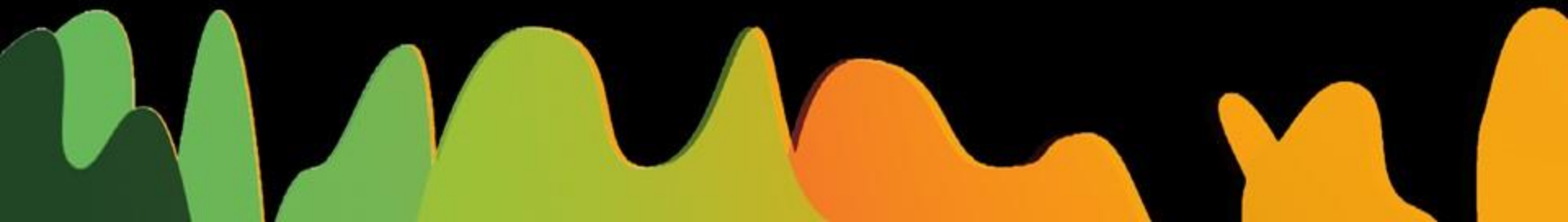
- Systematic botany: study the evolutionary history of plants. classify, give names to new species.
- Plant Physiology: study the functioning of plants.
- Plant Anatomy: shape and structure of plants.
- Ecology: plants relate to other organisms in their environment. Formation of ecosystems.



# Importance of plants



- O<sub>2</sub> producers
- The plants sustain the trophic chain
- The plants are our main source of food
- Many plants we extract medicine
- Provide fuel
- The plants provide other products such as wood, paper, roofing, seasonings, ornaments, dyes etc.



# Plant diversity (Lower)



## Bryophytes



Liverworts



Moss

## Pteridophytes



Horsetails








Ferns

# Plant diversity (superior)



Gymnosperms



Angiosperms

	Seed	Root	Vascular	Leaf	Flower
<b>MONOCOTS</b>					
	One cotyledon	Fibrous roots	Scattered	Parallel veins	Multiples of 3



	Seed	Root	Vascular	Leaf	Flower
<b>DICOTS</b>					
	Two cotyledon	Tap roots	Ringed	Branched veins	4 or 5



# Bryophytes (mosses and liverworts)

- These plants lack roots, stems and leaves.
- These plants lack roots, stems, and leaves.
- It does not have a vascular system.
- These plants need water to survive and reproduce.
- Useful as bioindicators because they are very sensitive.



# Pteridophytes



- Horsetail:
- These plants are terrestrial and small.
- Small leaves are scaly and grow by rhizomes.
- Developed vascular system but its roots are small, stems hollow inside
- These plants have terminal strobili for their reproduction by spores.

- Ferns

These plants generally live in the tropics and measure from a few cm to 18 meters in height.

Ferns have a well-developed root, stem, leaves, and vascular system.

The reproduction of these plants is by means of spores produced in it instead of its fronds.



# Gymnosperms

- They are a group of heterogeneous plants with species of very different origins.
- These plants have a developed vascular system but do not produce flowers.
- Reproduction by means of seeds produced in the strobili.
- It is comprised of different edges:



## Cycadophytas (cycas)



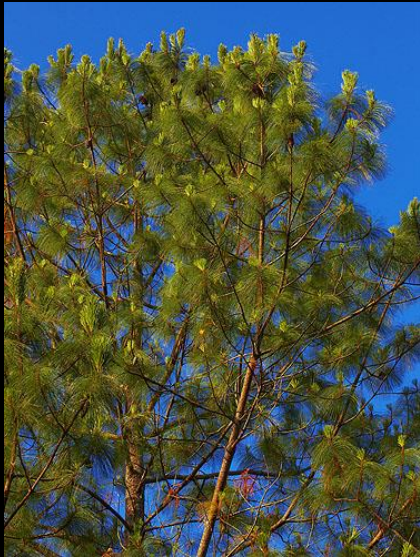
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## Gymnophytas (ginkgo)



# Pinophytas

(Pines, cypresses, firs and araucarias)



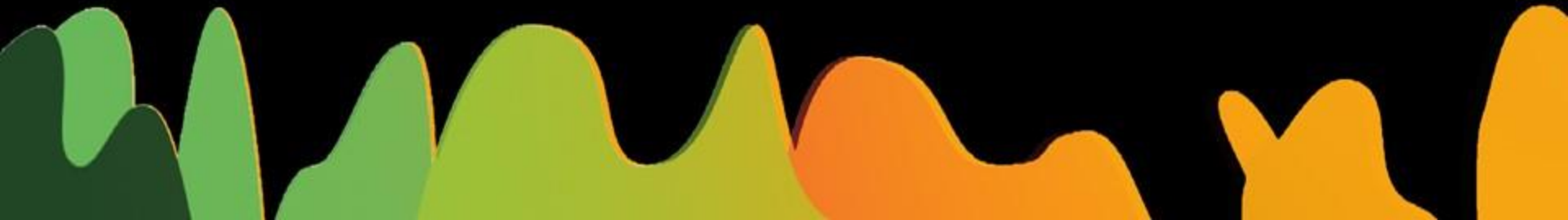
*Pinus maximinoi*



*Cupressus sp*



*Abies guatemalensis*



# Angiosperms

- Dominant in the plant life of the planet
- Adapted to different climates, both deserts, bodies of water, mountains and very cold climates.
- These plants represent the most important building block of food for animals and humans



• FABACEAE



*Zea mays*



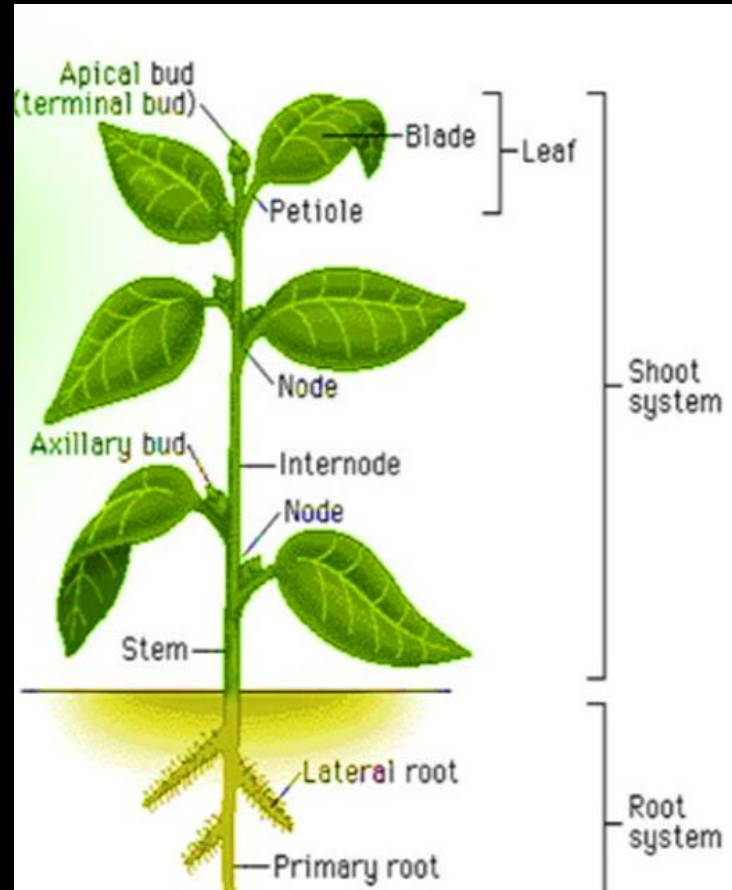
*Heliconia latispatha*



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# Plant morphology

- Stem system
- Stems, leaves, flowers
- Root system
- Roots



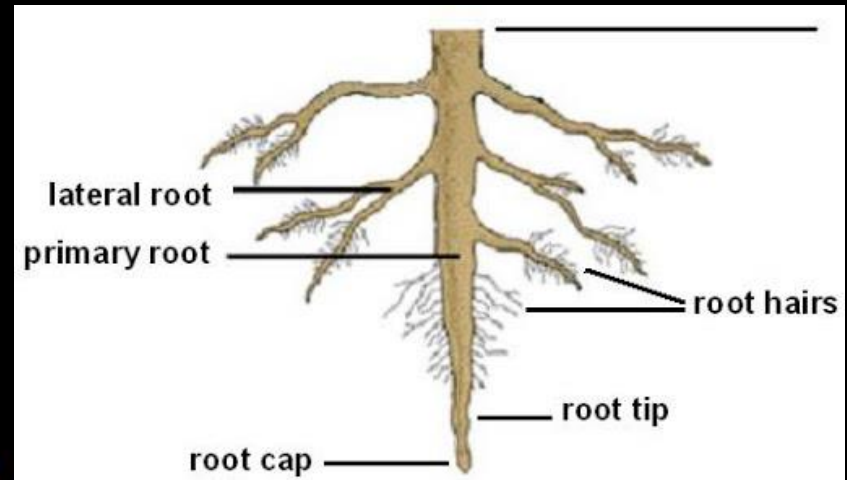


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# Roots

functions:

- Anchoring the body of the plants.
- The roots absorb nutrients and water from the soil.
- Production of hormones and symbiosis with microorganisms to regulate the development of plants.

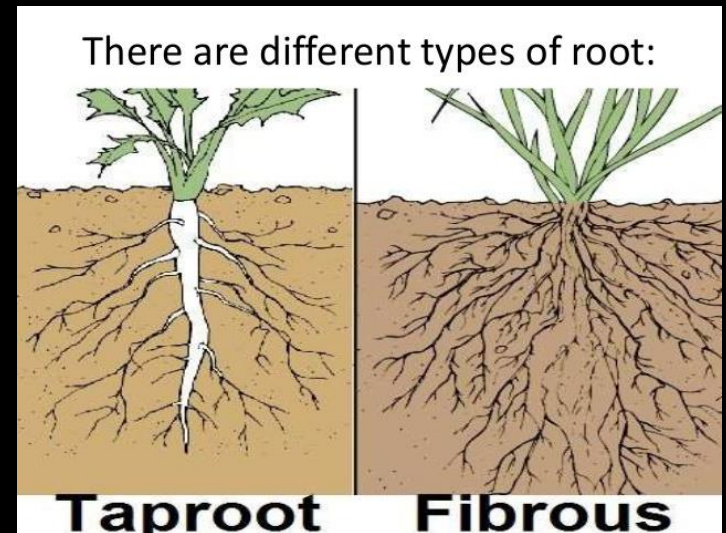




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# Root growth models

- Axonomorphic root:
- It has a primary root whose function is to explore underground, it branches.
- Fasciculate root:
- It expands horizontally, it does not explore great depths of the ground.



# Types of roots

## Aerial roots

*Rhizophora mangle*



## Reserve roots

*Manihot esculenta*



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Tabular roots

*Ceiba pentandra*



Parasitic roots

*Ficus* sp

(these roots are different  
from epiphytic roots)



# Stem

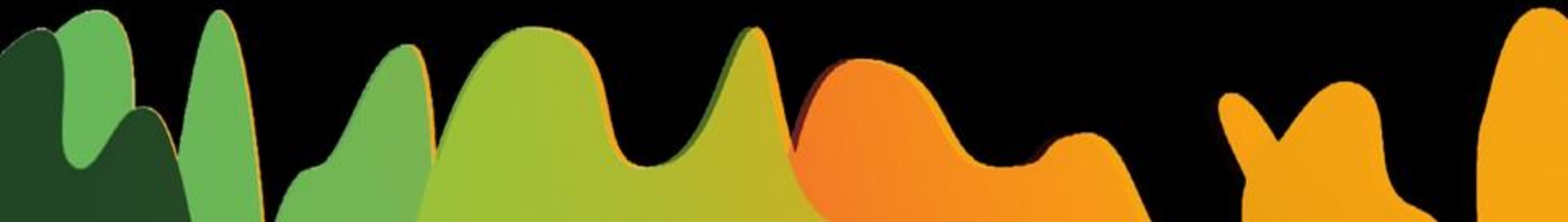
- It's the part of the plant that has the functions of supporting the leaves, flowers and fruits and conducting the sap through their vessels. It grows in the opposite direction to that of the root.





# Stem types

- Woody (oak),
- Semi-woody
- Herbaceous (corn)





# Stem modifications

- Rhizome



- Bulbs

Liliaceae



- Tubers  
*solanum tuberosum*

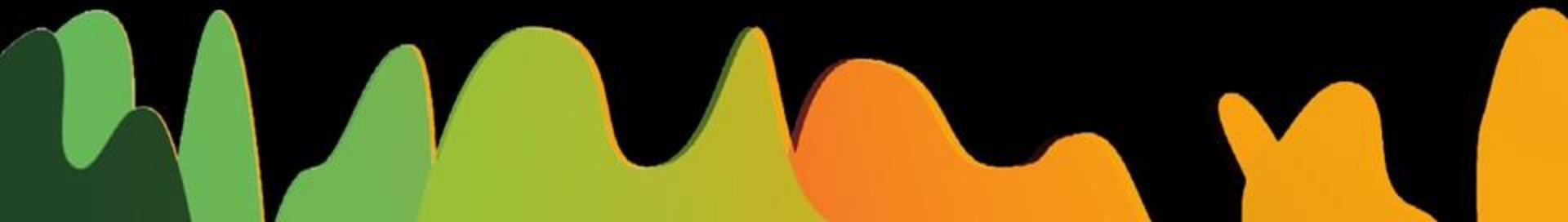


- Water reserve  
Cactaceae



# Leaves

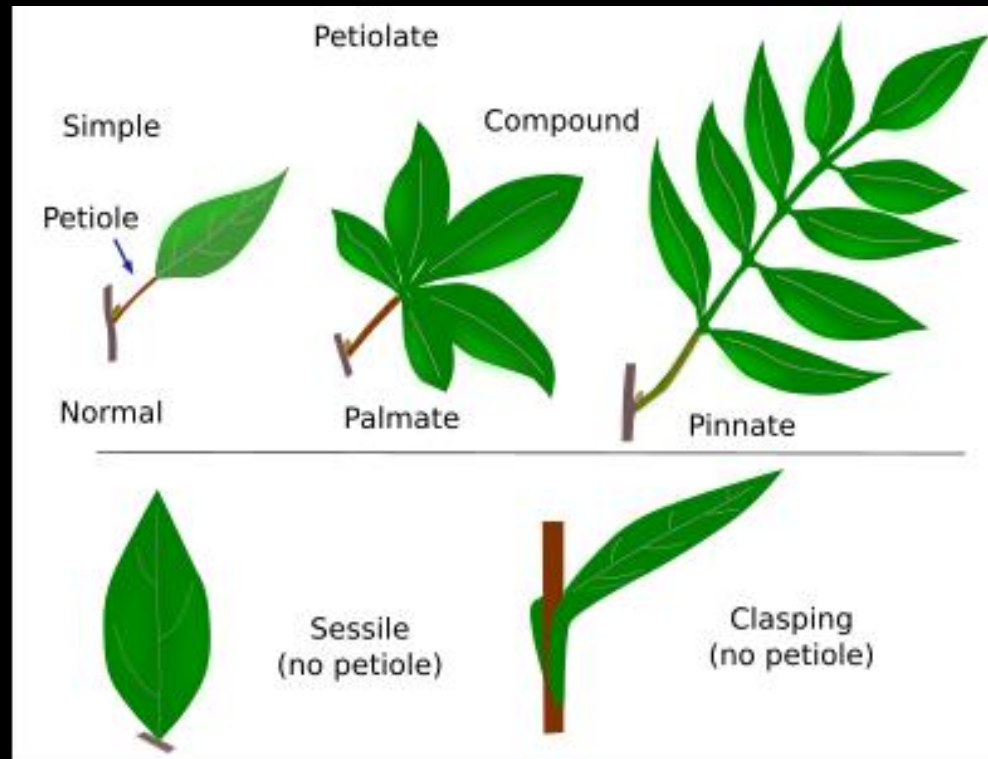
- It's the flattened organ through which the plant performs photosynthesis.
- The green color of the leaves is due to chlorophyll, these leaves are born at the nodes of the main stem and originate from a bud.





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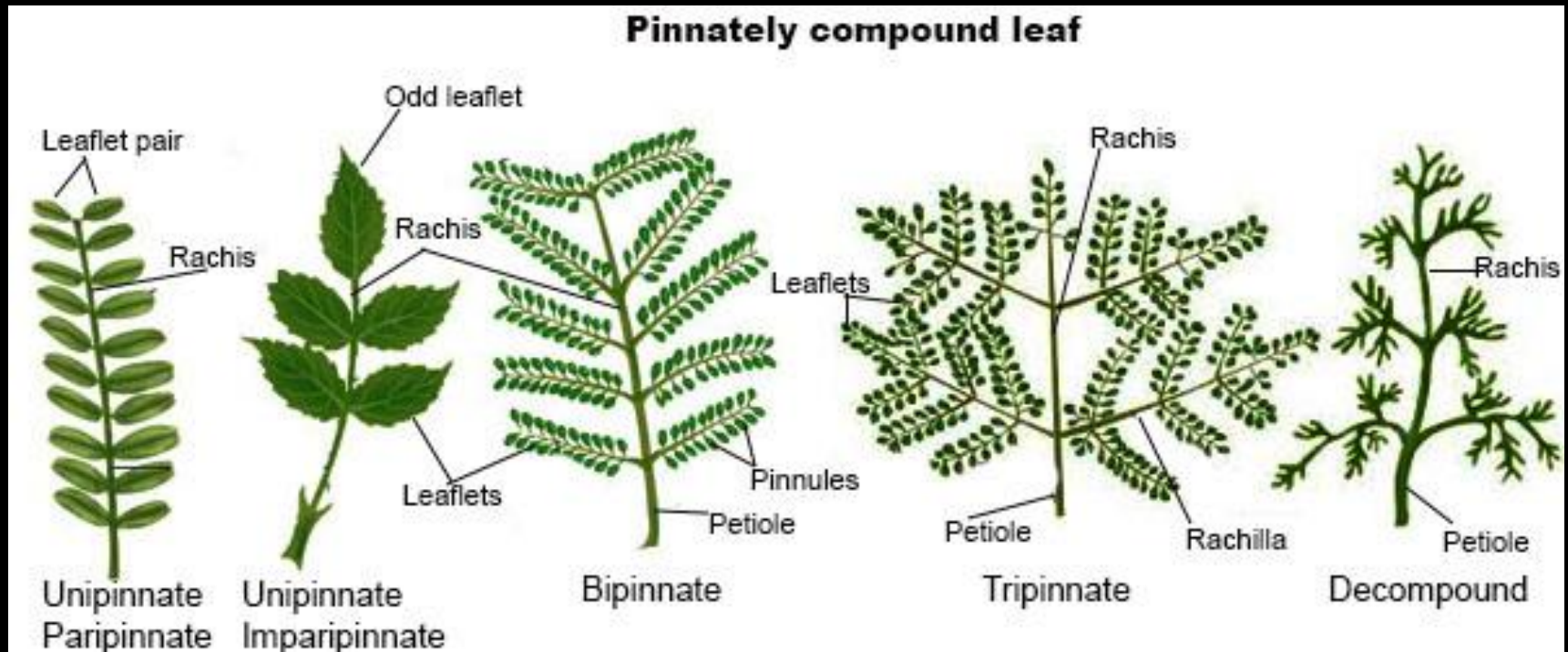
# Classification of leaves according to their type





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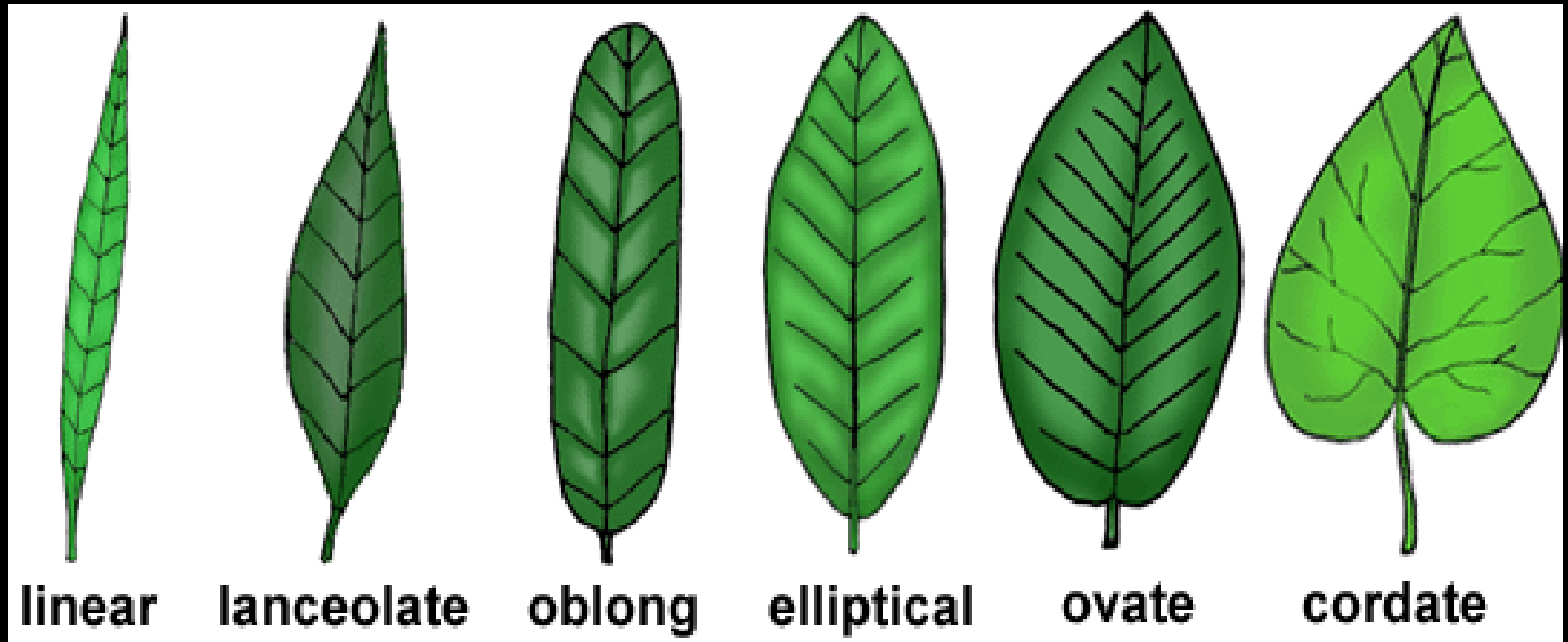
# Types of pinnate leaves



# Types of leaves according to their blade



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# Types of leaves according to their margin



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# Types of leaves according to their apex



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Acuminado



Bruscamente  
acuminado



Agudo



Apiculado



Obtuso



Retuso



Cuspidado



Mucronado



Mucronulado



Redondeado



Emarginado



Caudado

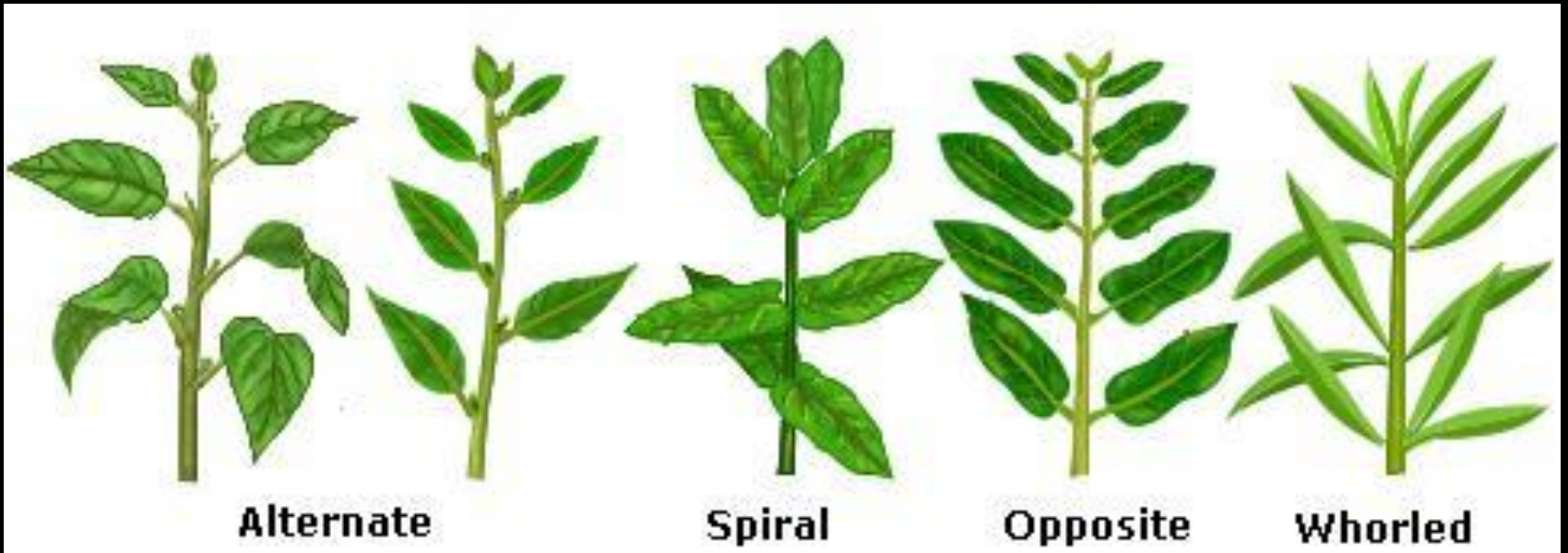


Truncado

# Type of leaves according to their phyllotaxis



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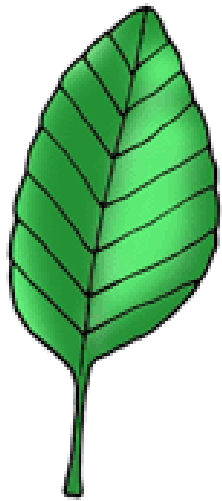


# Type of leaves according to their veins

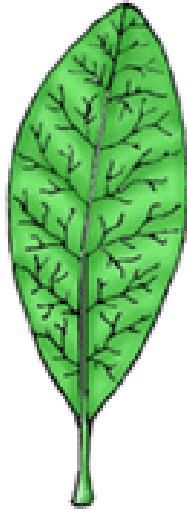


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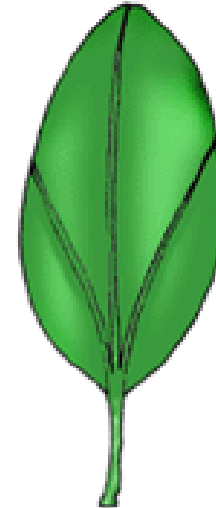
**pinnate**



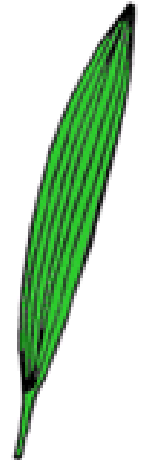
**reticulate**



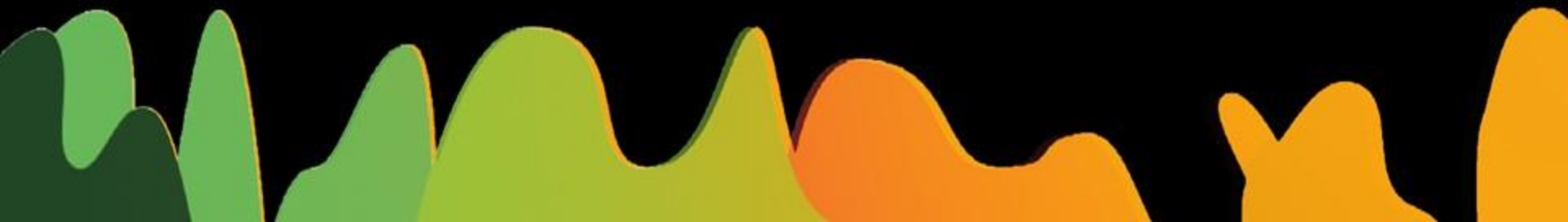
**palmate**



**3 main veins**  
some *Ceanothus*



**parallel**





# Leaf modifications

Spines  
Cataceae



Tendrils  
Cucurbitaceae



- Bracts



- Fleshy leaves

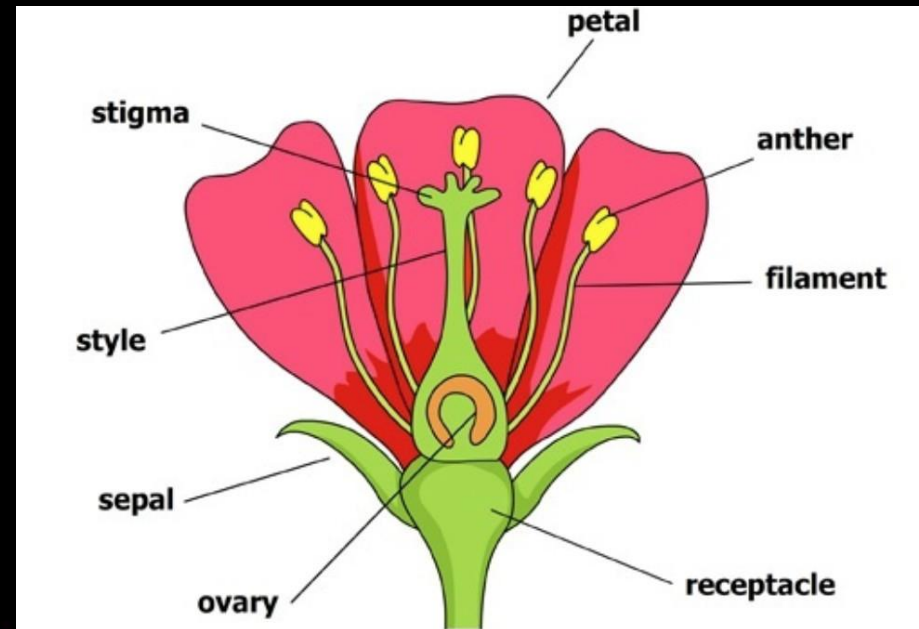




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# The Flowers

- The flower is the reproductive organ of plants
- Monoecious
- Dioecious
- The flowers are pollinated by insects, wind, water
- animals such as mucilages, birds etc



# Inflorescences

- Multiple flowers
- The peduncle may contain a single flower, or a group of flowers called an inflorescence.
- In an inflorescence, each flower sits on a small stem called a pedicel.





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**Spike**



**Cyme**



**Catkin**



**Capitulum**



**Raceme**



**Corymb**



**Umbel**



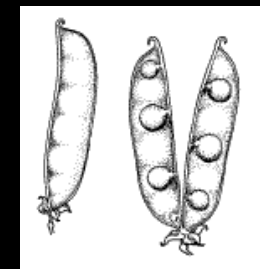
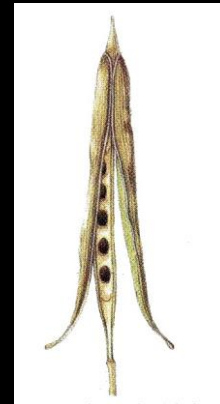
**Compound**



**Panicle**

# Fruits and seeds

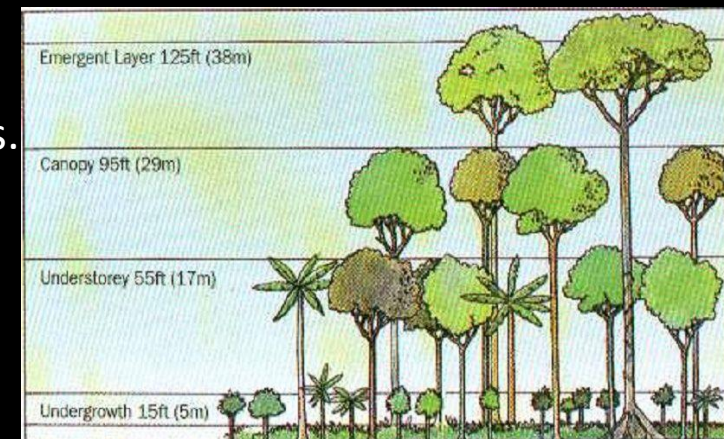
- It's the mature fertilized ovary and its mission is to protect and help the dispersal of the seed.
- Dry and fleshy fruits
- legume (FABACEAE pods)
- grain or caryopsis (corn)



# Plant ecology

In forests, seven strata can be distinguished:

- Arboreal or arborescent: It is made up of the treetops. The height at which most of the crowns reach is the Canopy and some taller trees are called Emergent
- Shrubby: It is formed by shrubs and tall bushes.
- Sufruitful: Low scrub.
- Herbaceous: Plants that do not exceed 30 cm in height.
- Gradient: Mosses and liverworts.
- Underground: Surface layer of the Soil.
- Epiphyte: Vegetables that live on other vegetables.

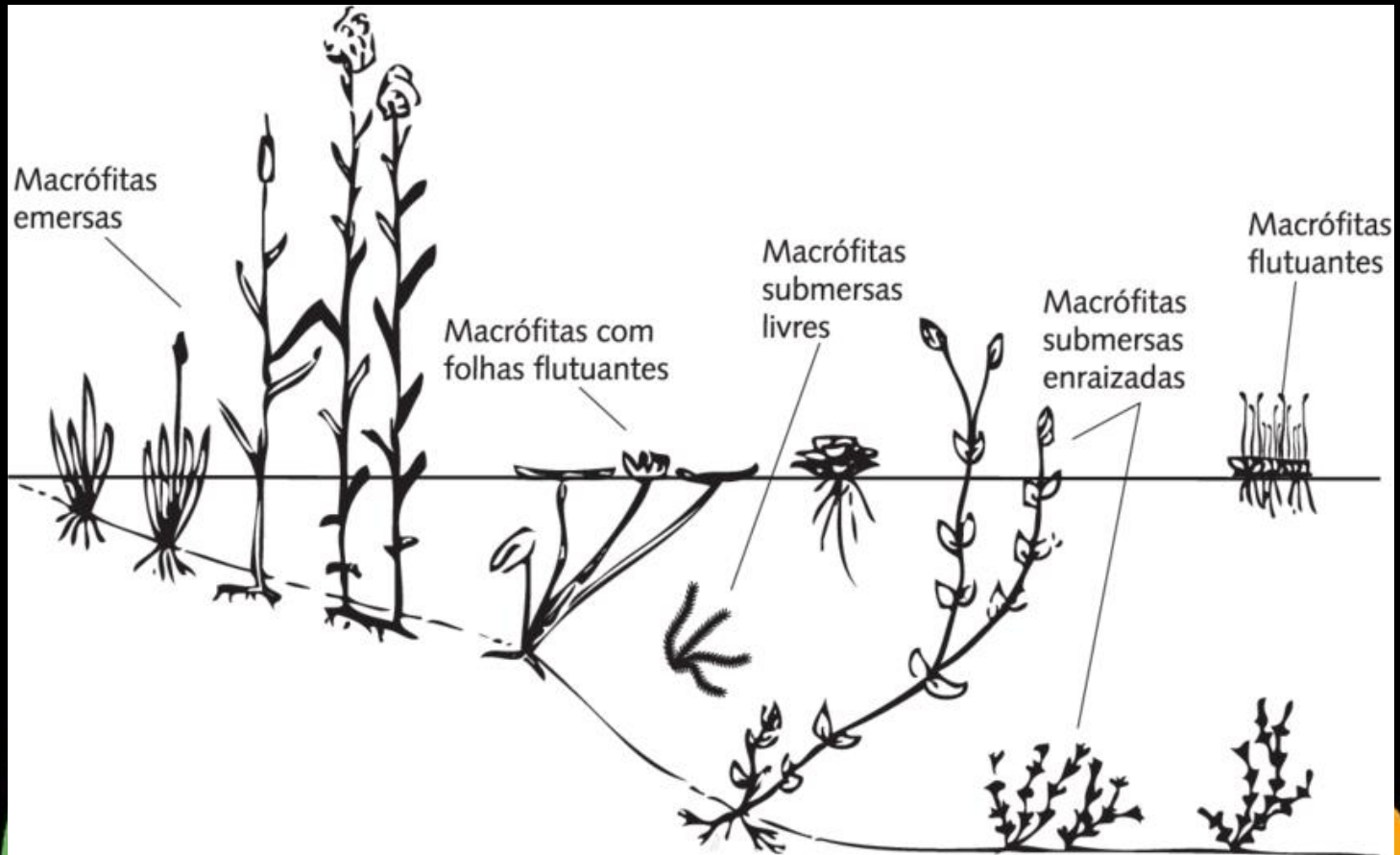




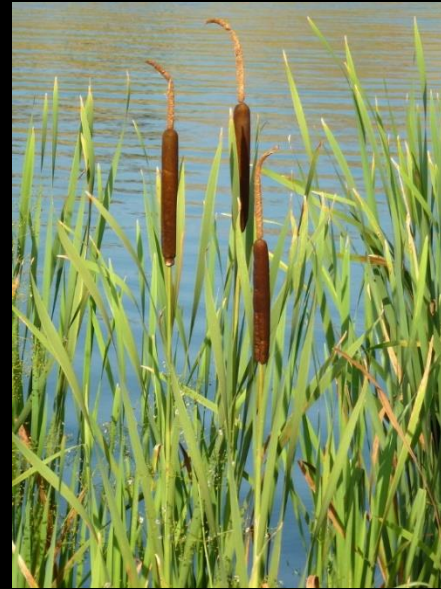
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# Ecology of aquatic plants

- Macrophyte



- Emerging rooted macrophytes
- Tul



- Floating rooted macrophytes
- *Nymphaea ampla*



- Floating macrophytes
- *Eichhornia* sp.



- Submerged rooted macrophytes
- *Elodea* sp



# THANKS!

## Contacts

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