

# CYCAS & PINUS

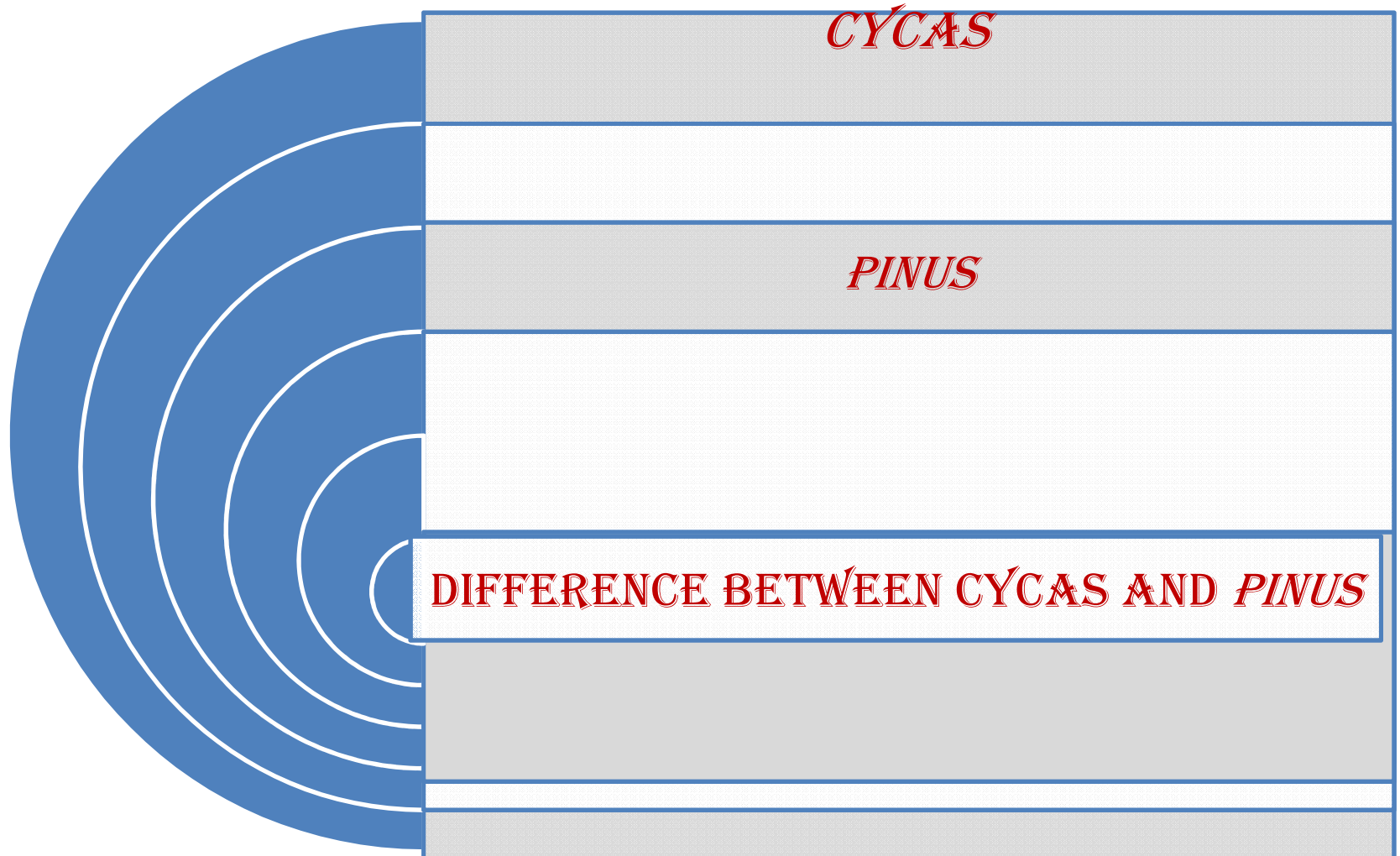


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# MAIN THEMES



# CYCAS :

- Cycas is a plant genus consisting of small, palm-like trees

Cycads are dioecious plants that develop male and female reproductive structures in separate plants. The male reproductive structure is cone-shaped while the female reproductive structure is leafy. The seeds of the cycads are covered with red or yellow color flesh. The growth of cycads occur very slowly and they can survive up to 1000 years.

# PINUS:

- *Pinus* is a plant genus consisting of tall, branched trees
- *Pinus* is a genus with coniferous trees commonly called pines.
- It belongs to the division **Pinophyta**.
- Around 115 pine species worldwide.
- Pines are native to the Northern hemisphere. can grow up to 147 feet. The diameter of their crown can be 30 feet.
- The bark of the pines is thick and scaly.

- The branches of the pines appear spiral points of the stem. Generally, pines are evergreen trees
- Leaves are needle-like.
- Pines are Monoecious plants, produce male and female cones within the same tree.
- Their pollination occurs through the wind, seeds contain wings.
- Woodpeckers and squirrels eat the seeds of pine.
- Broken bark of pine secretes resins that are highly inflammable.

# CYCAS AND PINUS

*Cycas* and *Pinus* are two genera of Gymnosperms. Both of them develop naked seeds, which are not covered by a fruit.

- *Cycas* is a dioecious tree while *Pinus* is a monoecious tree

# SIMILARITIES BETWEEN CYCAS AND PINUS

- *Cycas* and *Pinus* are two genera of gymnosperms.
- They do not develop a fruit which covers the seed. Their seeds are endospermic and the endosperm is haploid.
- Both do not develop flowers. Their cones are unisexual.
- The main pollination method of them is the wind.
- Their sporophylls, the leaves, which bear sporangia occur in cones.
- Their leaves are mainly needle-like.
- They develop a strong stem and a long, tap root system.
- They have a well-developed vascular system. Their xylem is made up of tracheids; no companion cells in the phloem; the tracheids in the secondary xylem do not possess spiral thickenings.

# DIFFERENCE BETWEEN CYCAS AND PINUS

- *Cycas* refers to a genus of several palm-like cycads Old World tropical plants while *Pinus* refers to a large genus of evergreen coniferous trees called pines, mostly found in the northern hemisphere. This constitutes the basic difference between *Cycas* and *Pinus*.

## Height

- One of the visually identifiable difference between *Cycas* and *Pinus* is their height. Cycads are short while pines are tall.

## Stem

- Also, the stem of cycads is thick, and cylindrical while the stem of pines is strong, cylindrical and scaly.

## Annual Rings

- Another difference between *Cycas* and *Pinus* is that the cycads do not develop annual rings, while the pines develop annual rings.

## Branching

- Cycad stem can be either branched or unbranched while the stem of pine is characterized by ex-current branching.



## Leaves

- Another clear difference between *Cycas* and *Pinus* is their leaves. Cycads have large, pinnate leaves, which are spirally-arranged while pines have either needle-like or scaly leaves.

## Roots

- Furthermore, the two types of roots in cycads are tap roots and coralloid while the two types of roots in pines are tap roots and mycorrhizal roots.
- Monoecious or Dioecious
- Moreover, the cycads are dioecious while pines are monoecious.

## Male Cones

- You can observe a difference between *Cycas* and *Pinus* in their cones too. The male cone of cycads is large and terminal, bearing numerous microsporophylls while male cone of pines is small and clustered.

## Female Cone

- The female cone of cycads is a whorl and loosely arranged while the female cone of pines is compact.
- You can also observe many other differences in their reproductive organs.

## Microspores

- Microspores of cycads are not winged while the microspores of pines are winged.



***Figure 1: Cycas tici***



***Figure 2: Cycas Male Cone***



## CYCAS

## VERSUS

## PINUS

### CYCAS



A genus of several palm-like cycads Old World tropical plants

Short

Stem is thick, and cylindrical

Do not develop annual rings

Can be either branched or unbranched

Have large, pinnate leaves, which are spirally-arranged

Two types of roots are tap roots and coralloid

Dioecious

Male cone is large and terminal, bearing numerous microsporophylls

Microspores are not winged

Female cone is a whorl and loosely arranged

Megasporophylls are large and each bear 1-5 big ovules

Male gametes are large and multiflagellated

Develop a single embryo

Show hypogeal germination

### PINUS



A large genus of evergreen coniferous trees called pines, mostly found in the northern hemisphere

Tall

Stem is strong, cylindrical and scaly

Develop annual rings

Stem is characterized by ex-current branching

Have either needle-like or scaly leaves

Two types of roots are tap roots and mycorrhizal roots

Monoecious

Male cone is small and clustered

Microspores are winged

Female cone is compact

Megasporophyll bear 2 ovules

Male gametes are small and non-motile

Develop four embryos, but one becomes functional

Show epigeal germination

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