Good day students. I am Amisha

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Today we will be seeing classification

Pteridophytes from the unit.

Pteridophytes.

Outline: We will be seeing

Introduction, the outline of classification,

And the characteristics of all the

Divisions.

Learning outcomes: explains

the classification of Pteridophytes.

Introduction: Pteridophytes constitute

a significant and important group

in the plant Kingdom as they

are the first true land plans.

Pteridophytes are seedless vascular

cryptogams and are often called as

the spore bearing vascular plants.

They occupy an important transitional

position between the bryophytes

and spermatophytes.

WM Smith in 1955 divided the vascular

cryptogams into four divisions,

namely first one was **Psilophyta**,

Second division, **Lepidophyta**,

Third Division, **Calamophyta**,

and the 4th Division **Pterophyta**.

Now each of these divisions is then

subdivided into classes and orders.

However,

today we would be focusing on

the characteristic features of

the four divisions.

The four divisions may also be known

by other names as mentioned here.

Division One **Psilophyta** may also be

known as Psilopsida
Division Two Lepidophyta may be known as Lycophyta/ Lycopsida/ Lycopodophyta
Division Three Calamophyta may be known as Sphenophyta/ Sphenopsida/ Arthrophyta
Division 4 Pterophyta
may be known as Pteropsida/ Filicophyta
coming to the Characteristics

Division One that is **Psilophyta**

Here the Members are have a

rootless sporophyte which is

differentiated into two parts,

a subterranean rhizome and

an erect aerial shoot.

Now both these the rhizome,

as well as the erect shoot

have dichotomous branching.

The rhizome shows the presence of rhizoids.

These rhizoids help in the absorption

of water and nutrients from the soil.

The leaves are often absent, if present.

They may be present as scales

and spirally arranged.

Like seen in Psilotum or they may be

present as appendages as seen in messages.

Vascular tissue is mostly primitive,

that is,

it is simple and more or less like protostele with annular or spiral tracheids.

Its secondary growth is absent in

members of **Psilophyta.**
sporangia

in these members are born at

the apex of the aerial shoot.

They are usually solitary in members

like *Rhynia* or maybe in groups.

Sporophyll is not present in this group.

The sporangia known to bear

spores all of the same kind.

Therefore,

these Members are homosporous in nature.

The gametophyte is known only in

Psilotum and *Tmesipteris* which are

the living genera and it is unknown in

the members of other **Psilophytales**.

The gametophytes is cylindrical or branched,

subterranean and colorless in nature.

The sex organs are partially

embedded in the prothallus.

Anthro zooids are spirally

coiled and multi flagellated.

This plant, seen here in the picture,

is Psilotum which is a living

member of **Psilophyta**.

The green part is the erect aerial shoot,

while the yellow structure

seen are the synangia or

the spore producing homosporous structures.

Next division that is **Lepidophyta.**
in **Lepidophyta** and the Sporophytic

plan body may be differentiated

into root stem and leaves.

Here the leaves are small,

then referred to as microphyllus,

and they show the presence

of a single midvein.

They may be arranged spirally

or in an opposite manner,

or as seen in some cases the

leaf may have a small structure,

called as ligule at the base.

If this ligule present,

then the leaf is set to be ligulate.

The vascular system here may either be

plectostele, siphonostele or sometimes even polystele. Leaf Gaps, however are absent.

The sporophylls are loosely arranged here

to form a structure called a strobilus,

also referred to as the cone,

the members here.

Maybe of both the types either

homosporous where they produce only

one kind of sports or heterosporous

where they produce two kinds of

scores seen in the picture is

lycopodium .

Lycopodium is a homosporous pteridophyte in the second picture is

a section of the Cone of Lycopodium,

where it is evident that all the

spores are of the same type.

That means the pteridophyte is homosporous.

In the second picture, seen, is Selaginella and the

section of the Selaginella cone.

Selaginella shows very evidently that there

are two different kinds of spores present,

the spores,

differing in shape as well as in number.

The spores, which are larger in

size and smaller in number,

are the megaspores.

Are the female sports and the spores,

which are larger in number

and smaller in size,

are the male spores or the micro spores.

continuing with **Lepidophyta**
Antherozoids are biflagellate or multi-flagellate.
The secondary growth does not

take place except in *Isoetes*
Now **Lepidophyta**
includes both

representatives fossil forms

as well as living forms.

Example of a fossil form is lepidodendron.

An example of the living forms

are lycopodium *Phylloglossum, Isoetes, Stylites* and *Selaginella.*

moving on to the third division that is

Calamophyta. the plant body here,

the sporophytic plant body is

differentiated into root stem and leaves.

Most of the Members here have

a stem that is long jointed,

articulated that is ribbed.

It shows the presence of ridges and furrows.

The stem mostly has nodes and internodes

and it is developed from the upright

aerial branches which comes up from

the underground creeping rhizome.

The leaves are thin, small, scaly brown,

scaly and present in whorls
at the nodal regions.

The branches also develop in worlds

from the axis of the scaly leaves.

The foliage leaves are reduced to scales.

Here the process of photosynthesis

takes place with the help of the stem,

which is green in colour.

The stem has a solid protostele,

or a medullated protostele. the

sporangia are born in specialized

appendages called sporangiophores.
Seen in the picture,

Here, are the sporangia of equisetum,

which is a little different as

compared to that of the other groups.

Sporangia are developed at the

apex of the fertile branches in

worlds which forms of compact cone.

The members are usually homosporous except

for a fossil form which is heterosporous

that is *Calamites.* gametophytes,

that is, prothalli, are green and may be either monoecious or dioecious.

Antherozoids are large and multi flagellated.

The embryo is without a suspensor,

an exoscopic in nature.

This **Calamophyta** also includes

both fossil representatives

as well as living forms.

Fossil examples are *Calamophyton, and Sphenophyllum*,

whereas *Equisetum* is the living example.

Moving on to the 4th Division

that is **Pterophyta**.

Members of **Pterophyta** occur

in all types of habitats.

Mostly these ferns prefer terrestrial

habitats with moist and shady places.

However,

there are forms found in aquatic xerophytic,

epiphytic halophytic,

as well as in climbing forms.

Examples of each type have been mentioned.

Majority of these Members have

a short and stout rhizome,

except for ANGIOPTERIS,

which is a tree fun.

The rhizome may be creeping up

right or growing above the soil.

The leaves are either are

simple or pinnately compound.

When pinnately compound,

it's mostly in the ferns where

they are then described as fronts.

Leaves are extrapolating some groups,

whereas in other groups they

may be stipulated in nature.

The vascular cylinder here

varies from a simple protostele to a complicated type of siphonostele. Solenostele, dictyostele and polystele are also found. vegetative reproduction may

take place by fragmentation, adventitious buds
, tubers or buy apogamy in various plans.

Sporangia rise from the placenta.
in groups now known as Sori.

The Sori develop on the margins

or actual surface.

Seen in the picture is so right

on the ventral side of the leaf.

These sori are protected by an indusium,

a true indusium in case of marsilea,

a false one In case of adianta mentiras.

This potential development may

either be left to sporangia or

useful injured in most of the cases,

the sporangia have a very

distinct annual annulus and stomium.

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members here maybe either

homosporous or heterosporous.

The gametophytes maybe either

exist exosporic or endosporic.

Antheridia and archegonia are partially or completely embedded in the gametophyte. Antherozoids are multi-flagellated.

The embryo may or may not have a suspensor.

The members of **Pterophyta** are plants

which are commonly known as ferns.

These are represented by about 300

genera and more than 10,000 species.

That's all for today's lecture.

These are my references, thank you.