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**Department of Botany  
HCT-1.2 Bryophytes and Pteridophytes**

**TOPIC-** ECONOMIC IMPORTANCE OF PTERIDOPHYTES

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# ECONOMIC IMPORTANCE OF PTERIDOPHYTES

# PTERIDOPHYTES AS FOOD

- Ferns are found to be good source of starch , greens and additives.
- Starch has been obtained from pulpy apical part of the caudex of certain species of *Cyathea* , *Angiopteris* and *Marattia*.
- Sporocarps of *Marsilea drummondii* (Australian swamp fern) are grounded into paste to prepare bread.
- These are considered to be starvation food used by tribals in various parts of the world.
- *Diplazium* is eaten in Philippines and in Malaysia.

Other freshly edible ferns are *Ampelopteris prolifera*, *Angiopteris evecta*, *Ceratopteris*, *Pteridium esculentum*, *Helminthostachys* etc.

- Rhizome of *Blechnum orientale* and pith of *Cyathea khasyana*, *C. nilgirensis* and many other species are cooked and eaten by tribals in many parts of the country.
- A salt has been prepared from the residual ash of *Asplenium atrobryum* that contain higher percentage of Potassium.



Marsilea drummondii



Asplenium atrobryum

# PTERIDOPHYTES AS WEED

- **Salvinia** . The water fern is one of the trouble some and dangerous weeds that propagates very easily in any water reservoir.
- It can block free flow of water.
- This plant has long been known as a pest in tropical and sub- tropical countries.
- Its eradication by physical means is quite difficult or impossible.
- Introduction of some predators as its biological control agent would help to reduce its growth and multiplication in water bodies.



Salvinia

- Terrestrial fernweeds, like *Pteridium sp.*, *Sphaerostephanos*, *Christella* etc. are also some of the troublesome weeds because of their habit of quick spreading by long creeping rhizomes.
- The braken fern *Pteridium aquilium* is capable of rapid colonization of bare grounds by establishment of numerous sporelings, especially after fire and this is a particular problem in tropical regions where the burning of grasslands is a common practice.
- The plant is toxic to livestock although the animals seem to do poorly in areas heavily infested with braken fern.





*Sphaerostephanos*



*Pteridium aquilium*

# PTERIDOPHYTES AS FIBRE, HANDICRAFT AND CONSTRUCTION MATERIAL

- Several species of ferns produce soft, sultry hairs on its surface that are being used to stuff pillows in many parts of the world.
- These species include *Cystodium sorbifolium*, *Ceiba pentanra* etc.
- Stems of *Cyathea magna*, *C.angienis* are used as picket fences in the highlands of New Guinea.
- Stems and rachies of ferns are often reinforced with strong sclerotic vascular strands or the outer layer itself is extremely tough and durable .Therefore several tree ferns are good fencing material.

- Even baskets are being made from *Lygodium* stems.
- *Equisetum debile* is used to clean cooking and dining utensils.
- Stem of *Equisetum debile* contains crystals of silica .



Baskets of lygodium



*Cyathea magna*



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*Equisetum debile*

# PTERIDOPHYTES AS HORTICULTURAL PLANTS AND RITUAL ITEMS

- Pteridophytes specially ferns occupy a special place almost in all green houses and gardens.
- Leafless green dichotomously branched “whish-fern” *Psilotum* is one of the common plant.
- In urban gardens, ornamental ferns are common.
- Tree ferns *Cyathea contaminans*, *C.felina* , and *C.magna* are encouraged to grow in gardens in many parts of world.
- Ferns like *Angiopteris* and *Marattia* are of high aesthetic value.
- Pteridophytes find their place in garden because of their beautiful appearance.

- Ferns are often used as personal decoration materials , either casually or for ceremonial occasions.

example: *Selaginella* and *Dicranopteris*





Psilotum





Angiopteris



- *Lycopodium* is used as head dress ornamentation on ceremonial occasions.



- Every garden has plants like several species of *Nephrolepis* and *Pityrogramma calomelanos* (the silver backed fern), these are present as attractive weeds.
- “Maiden hair fern” – *Adiantum cuneatum*, *Adiantum trapeziform* and other cultivar varieties often supplement the garden beauty.
- Various species of *Selaginella* have been used by green houses as border plants.
- *S.lepidophylla* is sold as dried plant on roadside local markets .
- *Lycopodium* has the status of Ground ring as far as horticultural aspects are concerned.
- *Lycopodium* is being used on various ceremonial occasions.



*Pityrogramma calomelanos*



*Lycopodium*



*Selaginella*

# PTERIDOPHYTES AS BIOFERTILIZER

- Azolla – a heterosporous water fern which contains endophytic cyanobacterium *Anabaena azollae* in its leaf cavity, used as biofertilizer in rice fields.
- Out of six known species of Azolla (*A.noliticas*, *A.mexicans* , *A.microphylla* , *A. rubra*, *A.pinnata* and *A. caroliniana*) . *A. pinnata* is common in our country.
- A rice farmer is sure of at least two good successive crops whenever Azolla plants in full bloom occupy the rice fields.
- It is referred as goddess of fertility.

- Its maximum cultivation is being done in nurseries which were harvested and dried to be used as green manuring.
- Azolla is also a heavy metal resistant plant and shows good tolerance against heavy metals like As, Hg, Pb, Cu, Cd, Cr etc.



# PTERIDOPHYTE AS MEDICINE

- STOMACH PAINS:

*Lycopodium clavatum* as well as *Lycopodium longifolium* are used for treatments of stomach aches and diarrhoea.



*Lycopodium clavatum*

## Fever , Headaches and colds :

- *Pteridium aquilinum* is used to treat tooth ache and mouth infection.
- leaves of *Cyclosorus* is used for treatment of nasal infection.
- *Selaginella flabellata* is used to control fever, headaches and menstruation.

## Boils, Ulcers, Wounds :

- *Gleichenia linearis* is being bound externally on to wounds.
- Leaves of *Pteris ensiformis* and *Aspidium latifolium* and roots of *Dryopteris milneana* are being applied to boils, ulcers and arrow wounds.





*Pteridium aquilinum*



*Selaginella flabellata*



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*Gleichenia linearis*



*Dryopteris milneana*

- Hot fronds of *Polystichum sp.* Are applied to groin swelling by tribals.
- Fronds of fleshy terrestrial fern *Angiopteris evecta* was bound on to fractured limbs .

## Menstruation, childbirth and contraception:

- *Pteris ensiformis* is used to control menstruation where *Pteris tripartita* is used internally during child birth in Bougainville.
- *Lygodium dichotomum* is used as a contraceptive, the roots and stem being taken internally.



Pteris ensiformis



Pteris tripartita

● **END**