

Topic: Importance of Fossil  
B.Sc. Botany Hons. II  
Paper: III Group: A

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Fossils have a potentially important role to play in taxonomy and phylogenetics. However, their use and interpretation has its own pitfalls and contentious issues. Under proper conditions, animals, plants and even microorganisms can leave remarkably good traces in rocks.

In certain cases the actual substance of the fossilized material is replaced by minerals or become greatly changed chemically.

But exceptions do occur, and fossils are sometimes formed under conditions that permit preservation of antigenic materials or even DNA, that can be isolated and put to systematic use.

Some well-preserved taxa provide a historic record of life on earth and thus provide a window into the past.

Any theory of evolution is incomplete without any palaeobotanic evidence. According to Lam (1959) no evolutionary doctrine would be perfect without palaeobotanic evidence.

## **The following Palaeobotanic studies have helpful in Fossil are discussed below-**

- ❖ The study of comparative morphology – Fossils not only provide details of the structure and sometimes the biology of extinct organisms, they can also provide estimates of the ages of the groups concerned.
- ❖ Providing phylogenetic evidence:
  - They provide additional taxa that can be scored for character states and included in a phylogenetic analysis.
  - They give a minimum estimate of the age of origin of particular taxa and their character states.
- ❖ Determining the evolution of the floras of the past.
- ❖ Determining the ecological conditions of the past.
- ❖ The palaeobotanic studies have proved helpful in the phylogeny of angiosperms.
- ❖ According to Dilcher (1979), paleobotany provides important information about several aspects of the origin and diversification, as well as the early history of angiosperms.

- ❖ On the basis of palaeobotanic studies a number of new concepts have been developed about the primitive flow types by Dilcher (1979).
- ❖ The evolutionary history of present-day plants, are often furnished by fossil records. Since the fossils of land-plants are scattered and poor, difficulties often arise in the interpretation of these data.
- ❖ The entire basis of fossil plant classification was changed by the appearance of angiosperms.
- ❖ A large number of fossil angiosperms, particularly leaves, seem to belong to extant families and to be related to recent genera. However, in some cases such affinity is unknown, either due to a lack of knowledge of living plant structure or due to poor state of preservation resulting in the absence of diagnostic features.