

Q (14)

"Crinago biloba is a Synthetic & living fossil of Gymnosperms" Is this justified?"

Ans →

Crinago biloba of course is a living fossil of family Crinagoaceae because of its remote past history right from Triassic period of Mesozoic era to the modern period of Cenozoic era and in possessing several archaic features common to Filicales, Cycadofilicales, Cordaitales & Cycadales.

This synthesis of characteristics from different existing and extinct groups in one living plant like Cr. biloba evidently makes it a nucleus for the palaeobotanists

A

Resemblances (or similarities) with Filicales ⇒

- ① lunate foliage leaves on dwarf shoots are similar to leaflets of Adiantum.
- ② Presence of open dichotomous venation.
- ③ In possessing multiciliate spermatozoids.
- ④ Presence of a distinct VCC in the archegonium.
- ⑤ the tracheids of primary xylem with bordered pits resembling sphingospermum.

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(B) Similarities with Cycadofilicales → (Pteridosperma)

(1) The abnormal occurrence of microsporangia and ovules of Ging Crinago on the leaves.
Fig - (3.58) T4)

(2)

(2) Presence of collar at the base of ovule is comparable to the cupule of Lagenostoma (Pterin)

(3) The stem with a leaf gap.

(4) The stem of larval shoot with a massive pitted well developed cortex and a scanty vascular cylinder.

(5) The wedge shaped leaves with open dichotomous venation may be compared to the wedge shaped pinnae of some pteridosperma.

(6) The presence of multiliculate sperms is comparable to those of Lyginodendron.

↪

- (C) Similarities with Cycadales \Rightarrow
- ① Both the pith & cortex have the mucilage canals.
 - ② Bars of spongy in some species of Cycad.
 - ③ Presence of two distinct kinds of leaves being Stalky & foliage.
 - ④ The pollen tube is purely haustorial in function.
 - ⑤ Top shaped multiciliate sperms derived from the body cell in both of them.
 - ⑥ Presence of distinct nucellar beak and a pollen chamber.
 - ⑦ Endosperm is large & massive.
 - ⑧ The archegonial structure is similar including a large venter & a very big egg nucleus.
 - ⑨ Embryogeny is holoblastic.
 - ⑩ The embryo being endoscopic has got normally two cotyledons.
 - ⑪ The mode of germination in both is hypogaeal & the cotyledons remain embedded in the endospermic tissue.
- fig (self).

(D)

Similarities with Cordaitales ⇒

- ① Presence of double leaf traces in both.
- ② Presence of motile spermatozooids.
- ③ Presence of endospermic beak in the four tent-pole in the mature ovule.

(E)

Similarities with Coniferales ⇒

- ① The cone like appearance of the tree.
- ② Stem is monopodial & is extensively branched.
- ③ Occurrence of dimorphic shoots like spur & long shoots.
- ④ Existence of dimorphic leaves namely scale foliage.
- ⑤ Photosynthetic leaves are simple.
- ⑥ Monoxyle wood of vascular cylinder pycnomoxyle.
- ⑦ Presence of Bays of Serot in the wood ~~pinus strobilus~~ pinus strobilus
- ⑧ Presence of uniseriate vascular rays & circular bordered pits as in Coniferales.
- ⑨ Leaves have swollen stomata.
- ⑩ Presence of two ear like structures & located laterally on the microspores Crinoids, resembling the winged poll pinus.
- ⑪ Development of male gametophyte in