

Polysporangiophyta

Tracheophyta, dominacija sporofita, lignifikacija, mehaničko tkivo, provodno tkivo, endoderm ...

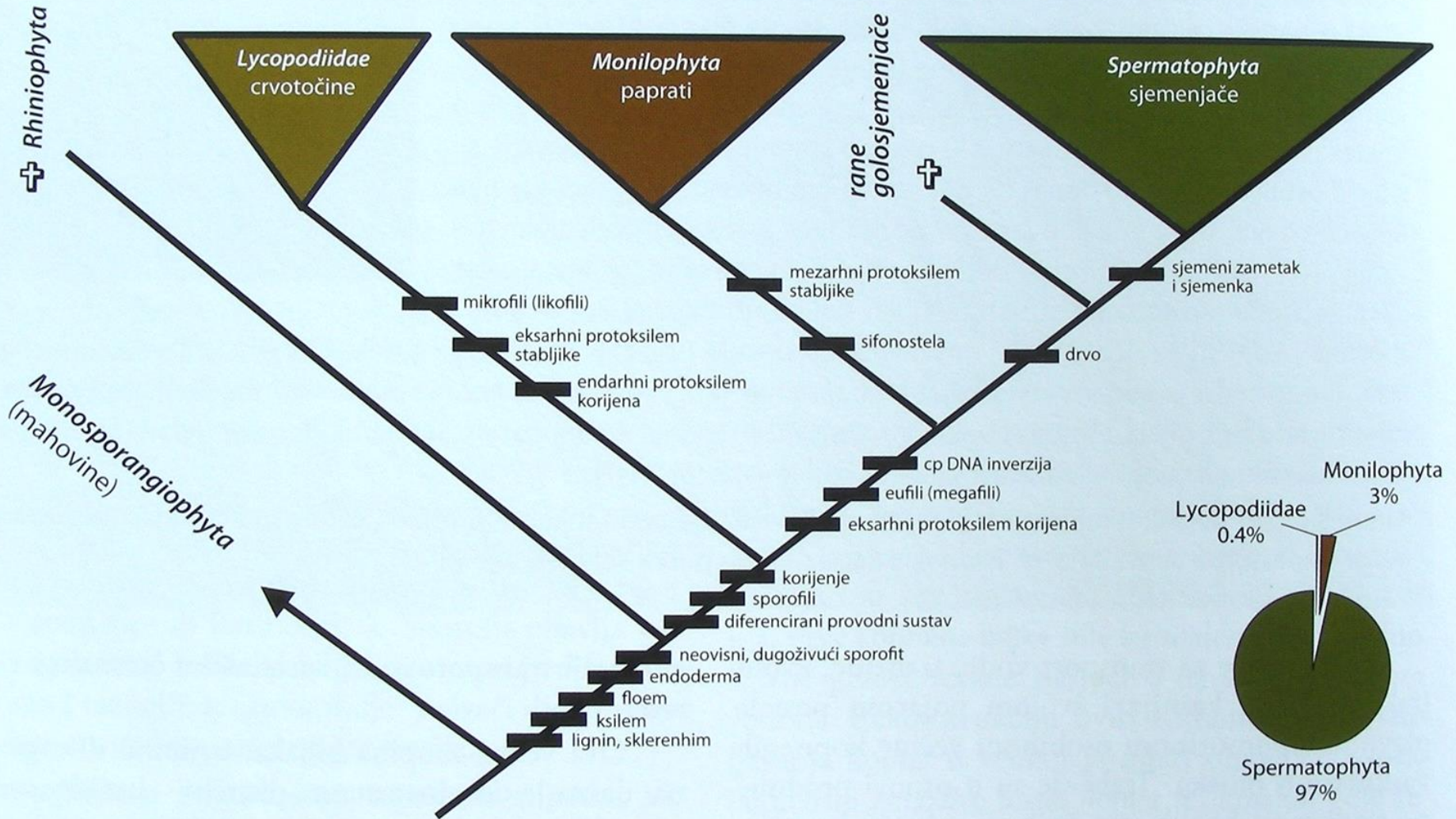
Polysporangiophyta

Tracheophyta, vaskularne biljke (Cormophyta)

Euphyllophyta, biljke s „pravim“ listovima

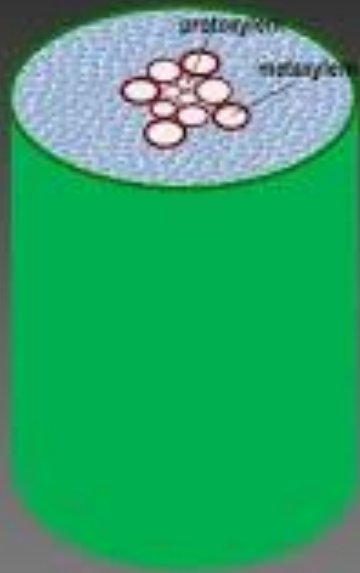
Tradicionalne papratnjače, *Pteridophyta* s. l.

Lignophyta, drvenaste biljke



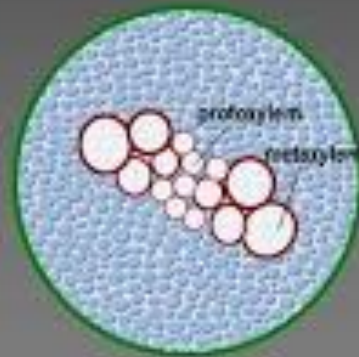
Centrarhni tip

(protoksilem- stariji i manji elementi su u centru cilindra, a mlađi i voluminozniji naokolo)



Enderhan tip

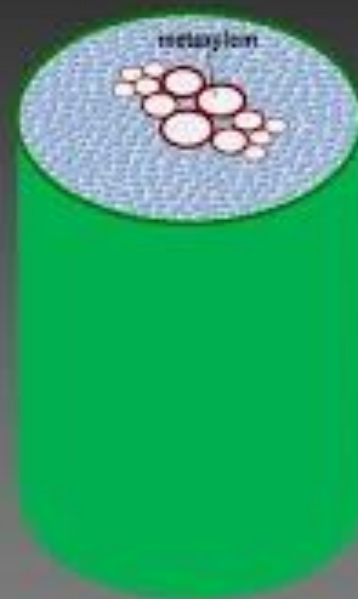
(protoksilem je u unutrašnjem dijelu, a metaksilem ka periferiji)



Razvoj ksilema

Egzarhan tip

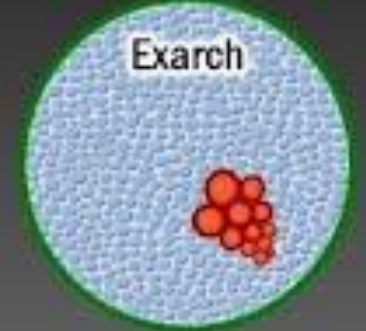
(protoksilem je na periferiji, a metaksilem u unutrašnjosti)



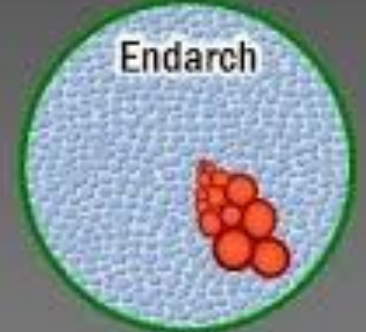
Centrarch



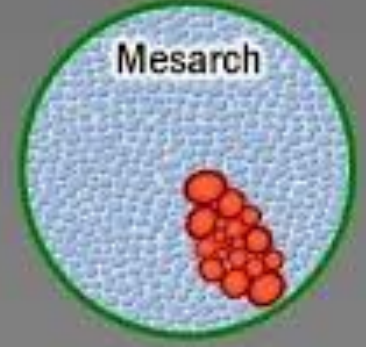
Exarch



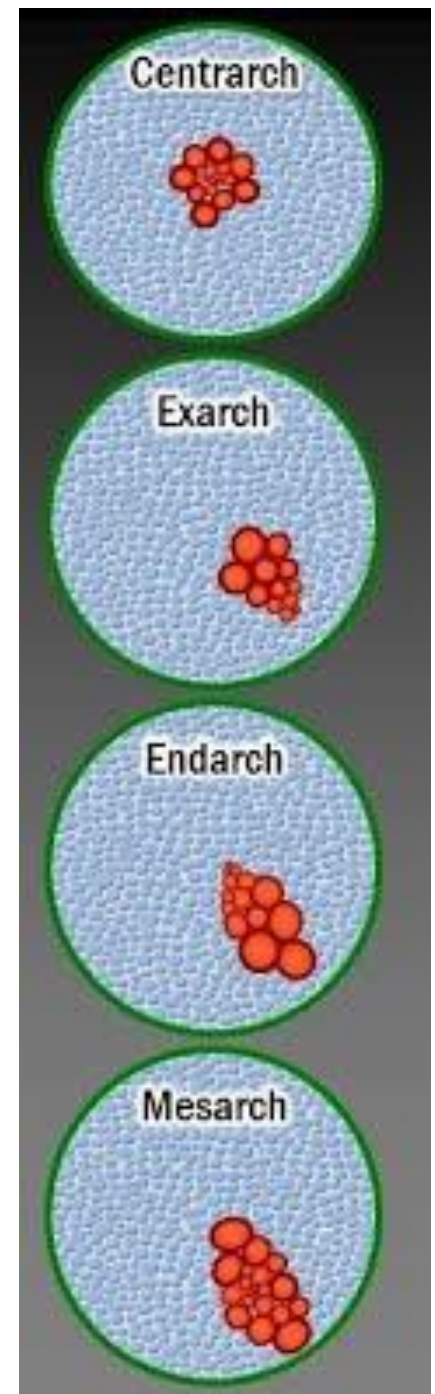
Endarch



Mesarch



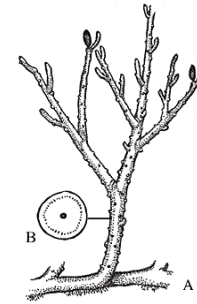
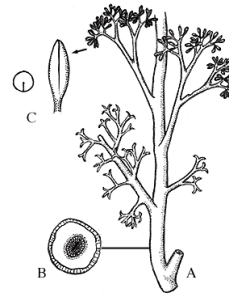
- **Centrarhan tip stele:** rinije.
- **Egzarhni:** stablo prečica, korijen sjemenjača.
- **Endarhni:** stablo sjemenjača
- **Mezarhni:** listovi i stablo monilofita.



Rinije (razdio Rhyniophyta)

gornji Silur-donji Devon (420-390 milona godina)





- Bezlisne niske zeljaste biljke (od nekoliko do 10tak cm visoke- max 50cm)
(samim tim sekundarnog debljanja nema!)

- Nemaju razvijeno mehaničko tkivo!

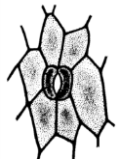
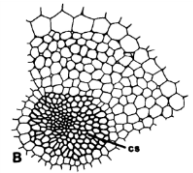
- Nemaju korijen ali imaju apsorptivne rizoide.

- Stablo granato- dihotomo, anizotomno, pseudomonopodijalno.

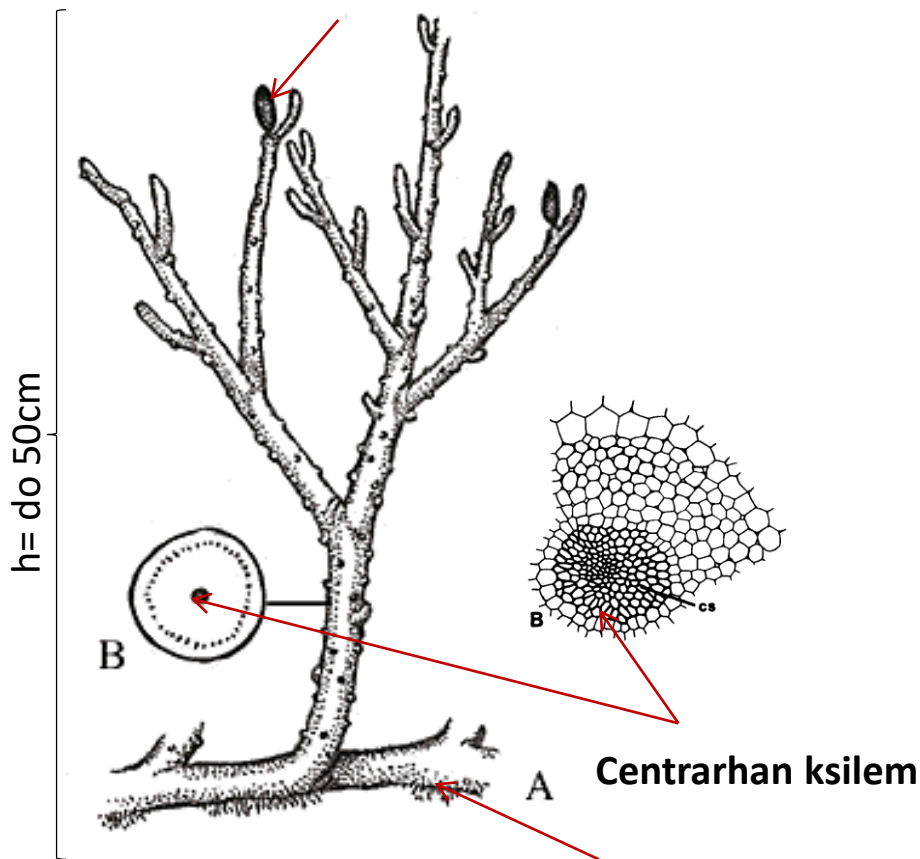
- Ksilem centrarhan.

- Traheidi sa prstenastim zadebljanjima.

- Sporangije terminalne, okruglaste.... uglavnom izosporne.



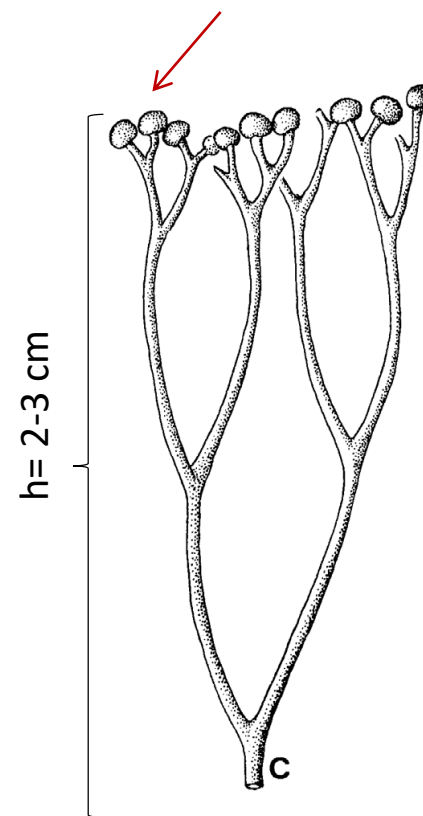
Eliptične sporangije
sa poprečnim šavom



Rhyia
(donji-srednji devon)

Horizontalno
podzemno stablo-
rizomoid sa
apsorptivnim
rizoidima

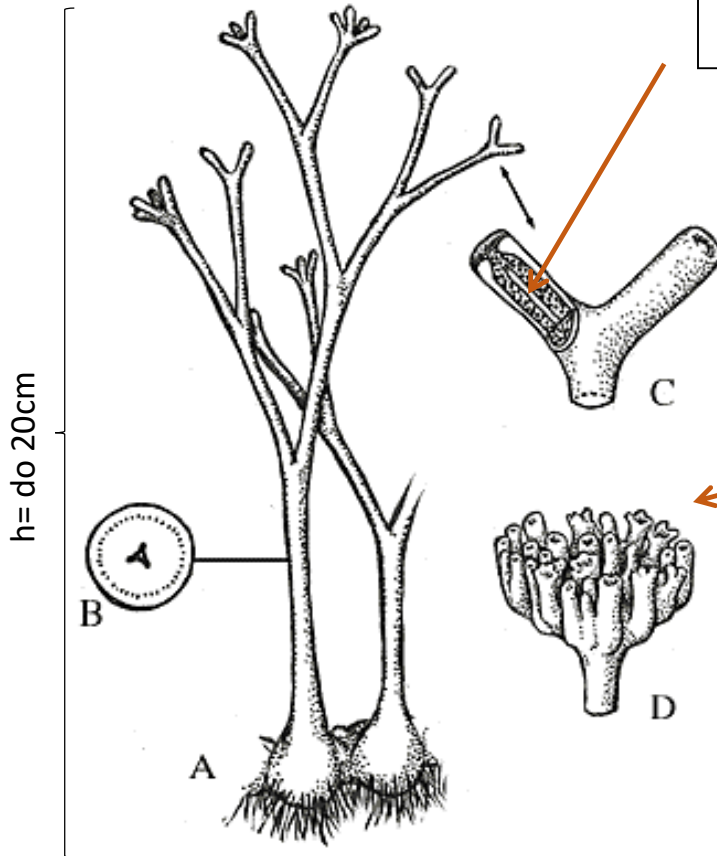
Bubrežaste sporangije
sa uzdužnim šavom



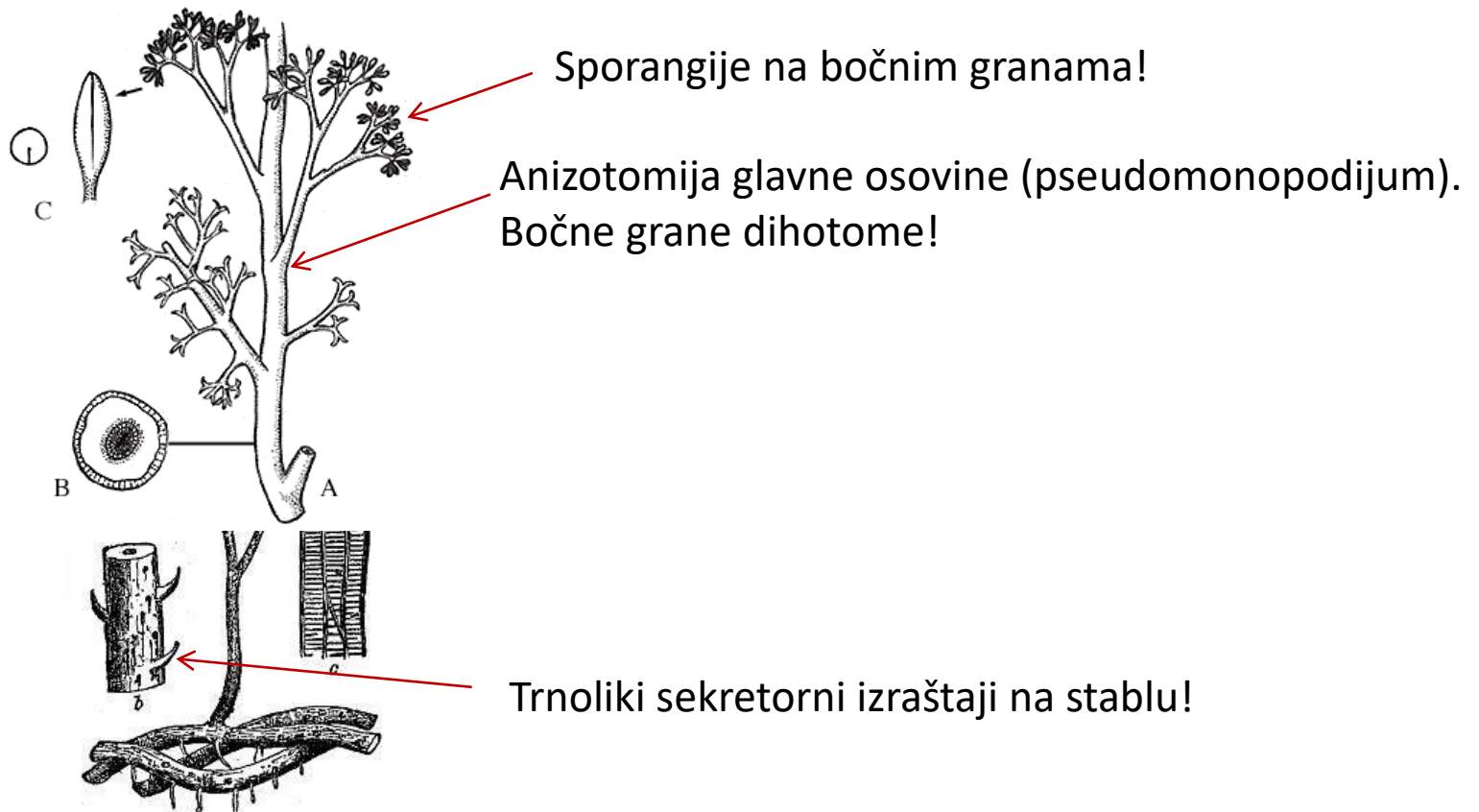
Cooksonia
(srednji silur-srednji devon)

Horneophyton (donji Devon)

Sporangija je uvučena ispod površine!!!
U centralnom dijelu sadrži sterilno tkivo
kolumelu (svojstvenu nekim mahovinama!).



Arhegoniofor sa cjevastim
arhegonijama
"Langiophyton mackiei"



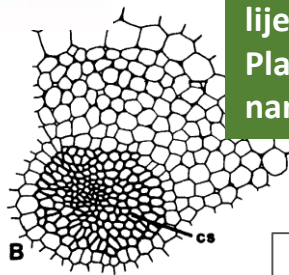
Psilophyton princeps
(devon)

Terminalne sporangije

Dihotomo granato stablo

Rizoidi

Aglaophyton sp.



Aglaophyton

Taylor et al. (2005)

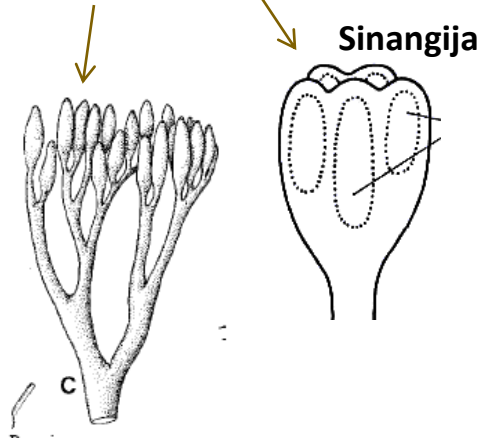
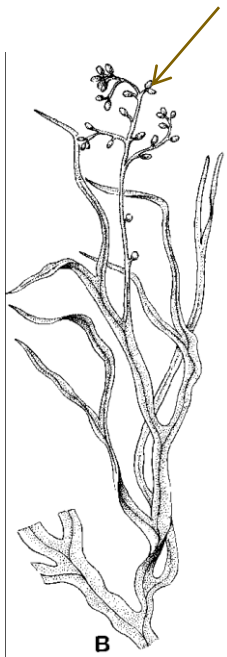


Ciklus razvića Algalophyton major- razviće dimorfnog gametofita. Zreo sporofit (dolje lijevo) nosi sporangije sa dvovrsnim sporama. Plave spore se razvijaju u zrele anteridiofore, a narandžaste u arhegoniofore.

Protostela

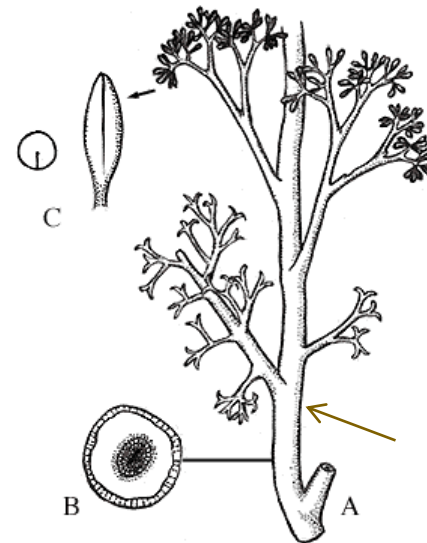
O. Rhyniales

Rhynia, Cooksonia, Horneophyton,
Taeniocrada?, Hedeia, Yarravia ?...



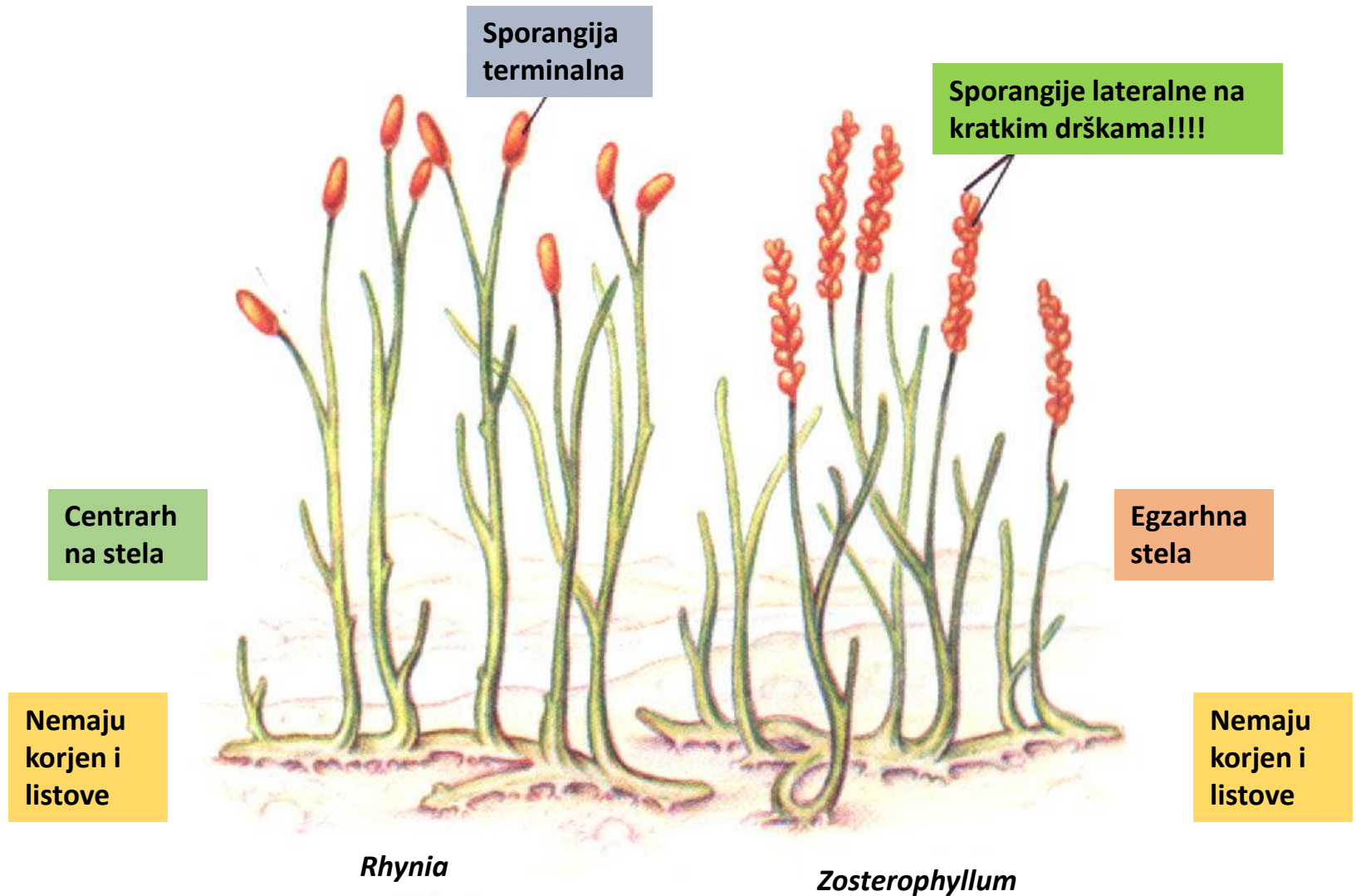
**Tendencija
izdvajanja
fertilnog regiona**

O. Psilophytales Psilophyton



**Izražena
glavna
osovina**

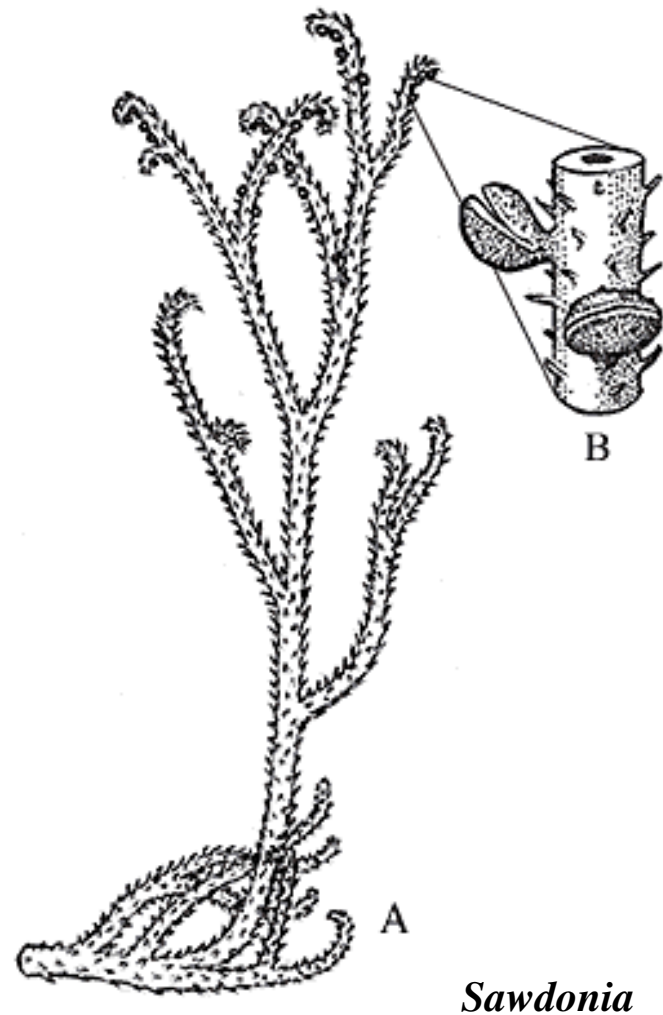
Div. Zosterophyllophyta



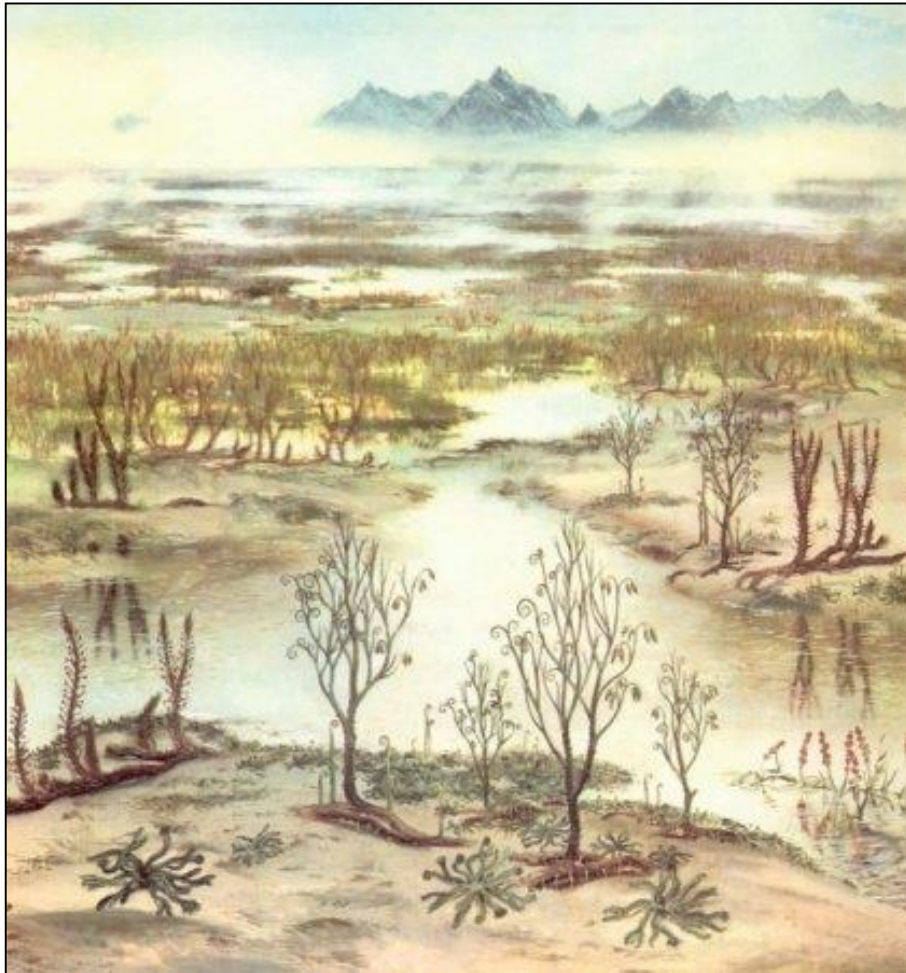
Prosta uspravna stabla sa bočno postavljenim sporangijama (*Zosterophyllum*, *Wenshania* etc.)



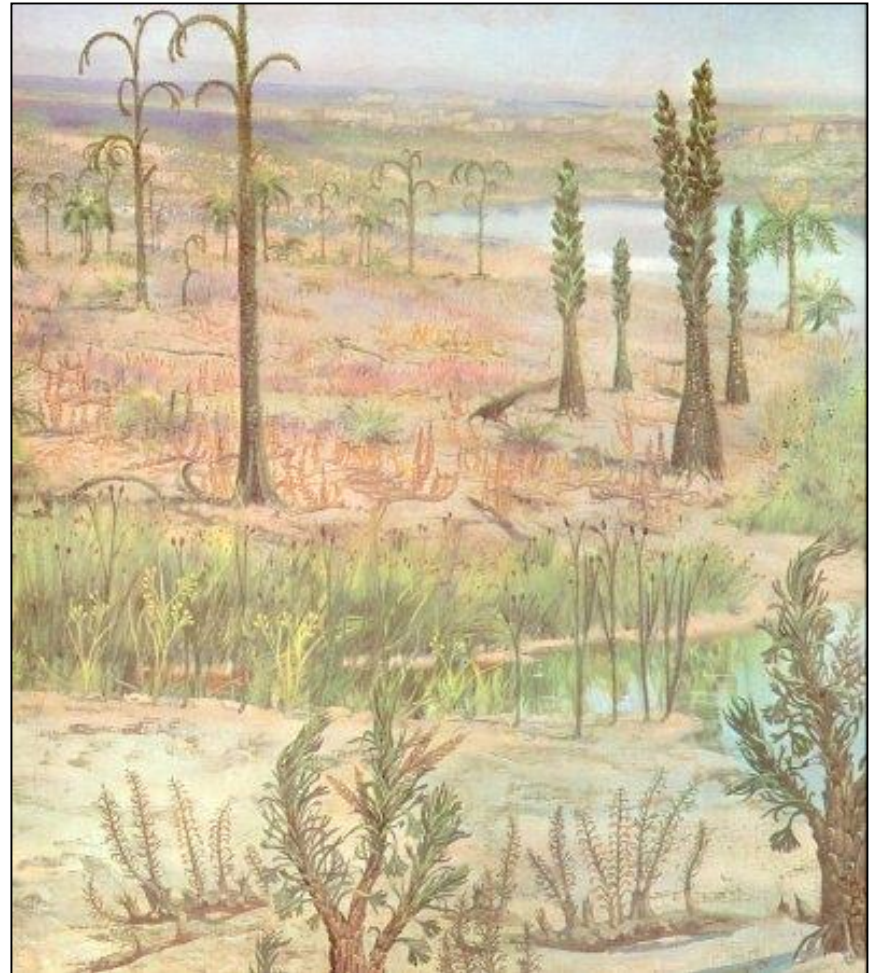
Pseudomonopodijalan rast; sporangije višeredno poređanje na granama (*Sawdonia*, *Gosslingia* etc.)



Silur 425-408 miliona godina



Devon 408-382 miliona godina



Tracheophyta, vaskularne biljke

Lycopodiidae, biljke s mikrofilima

Euphyllophyta, biljke s „pravim“ listovima

