

IN THE BEGINNING THERE WERE BRYOPHYTES – OR HOW IT WAS WITH THE COLONIZATION OF LAND BY PLANTS

Summary

One of the most pivotal events in history of life on Earth was colonization of land by plants. It is also one of the mysteries of evolution and phylogenesis. Nowadays due to molecular studies, based on data from different gene sequences DNA, a new light was shed on the origin and early evolution of land plants. In this paper current knowledge of early phylogeny of land plants is summarized. Alleged ancestors of land plants are believed to have evolved from Charophytes, a group of green algae, but this issue is still controversial which of charophytes are the closest relatives of modern embryophytes (generally the Charales or Coleochaetales are mentioned). It is stated, that colonization of the land began in Ordovician times, ca. 475–450 million years ago – such old are cryptospores, the earliest confirmed land plant fossils.

The first land plants probably resembled the present-day liverworts, thus bryophytes phylogenetically are the oldest plants living on land. The phylogenetic relationships among bryophytes – mosses, liverworts and hornworts – are not clearly explained. Hornworts are most frequently indicated as the sister group to tracheophytes, but some alternative analyses point at mosses as sister group to tracheophytes or a clade composed of mosses and hornworts.

Colonization of land by plants was connected with changes in their life cycle (apart from a lot of anatomical and physiological adaptations). It is believed that endophytic fungal associations played a very important role in adaptations of plants to new environment.