The earliest evidence of land plants

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The earliest evidence of land plants does not come from macroscopic plant remains, but from their propagules - the miospores. The latter were produced by plants believed to be of a grade of complexity similar to bryophytes which are difficult to fossilize.

The earliest land plant macroremains are Wenlock in age and pertain to the tracheophyte genus *Cooksonia*. However, the miospore fossil record tells a different story. Earliest evidence is coming from a type of miospores called cryptospores. That according to some authors appears as soon as the Cambrian. However, these authors use a wide definition of it and consider that cryptospores are comprised of all continental palynomorphs and thus could be produced by a wide range of organisms (including algae). Other authors, based on a more restrictive definition of the cryptospore concept consider that they appear at the beginning of the Ordovician. It is this more restrictive concept that will be used here. There is little doubt even though fossils are missing on what plant produced them. Indeed, cryptospores have, on rare occasions, been observed *in situ* and only within bryophyte and bryophyte-like plants (i.e. the Late Silurian of UK). They have never been observed within sporangia pertaining to tracheophytes. It thus appears that land plants evolve during the Ordovician. This is further supported by the observation in the Late Ordovician of Oman of a single sporangia containing cryptospores.

Trilete spores are interpreted as a more derived type of spores than the cryptospores and were considered to appear during the Silurian. However, recently, earlier occurrences have been recorded in the Late Ordovician of Saudi Arabia. It is however not clear what type of plant produced them. Indeed, trilete spores are classically considered to be produced by tracheophytes. However, in extant nature, some bryophytes may produce trilete spores. The question thus remains open whether these spores were produced by bryophytes-like plants or tracheophytes.