

# Batrachospermum

## Systematic Position

**Division**—Rhodophyta

**Class**—Florideophyceae

**Order**—Batrachospermales (or Nemalionales)

**Family**—Batrachospermaceae

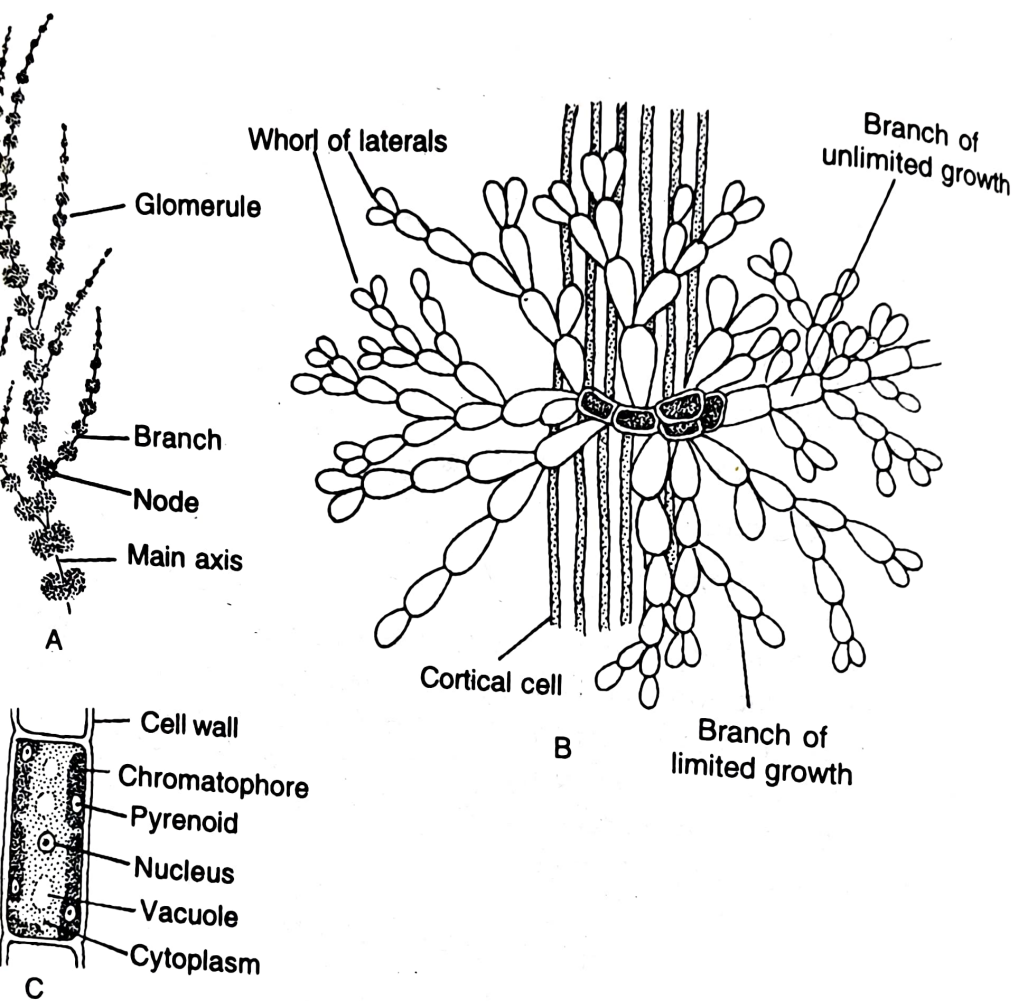
**Genus**—*Batrachospermum*

**Occurrence:** *Batrachospermum*, with its about 100 species, is distributed in tropical, sub-tropical and temperate areas. It grows in clean water but a few species are known to grow in brackish water. The common Indian species recorded from Dehradun is *B. vagum*, popularly known as *frog spawn* because of similar appearance. It is annual but a few may be perennial such as *B. vagum*.

## THE PLANT

**Structure:** The plants are smooth and slimy and appear in various colours. Such a variation is observed due to differences in greater depth in water are reddish while on the surface they are green. The plant body with the naked eyes looks like a branched system into prostrate and erect system. The prostrate system is attached to substratum while erect portion float freely. A plant consists of central main axis of large number of elongated segments into nodes and internodes. The internodes are further divided into smaller segments.

of limited growth are narrower at the base and comparatively broad to hemispherical. This is characteristic feature of the genus.



*Utrichospermum*. A—habit of the plant, B—a nodal part enlarged showing position and branching and C—a single cell.

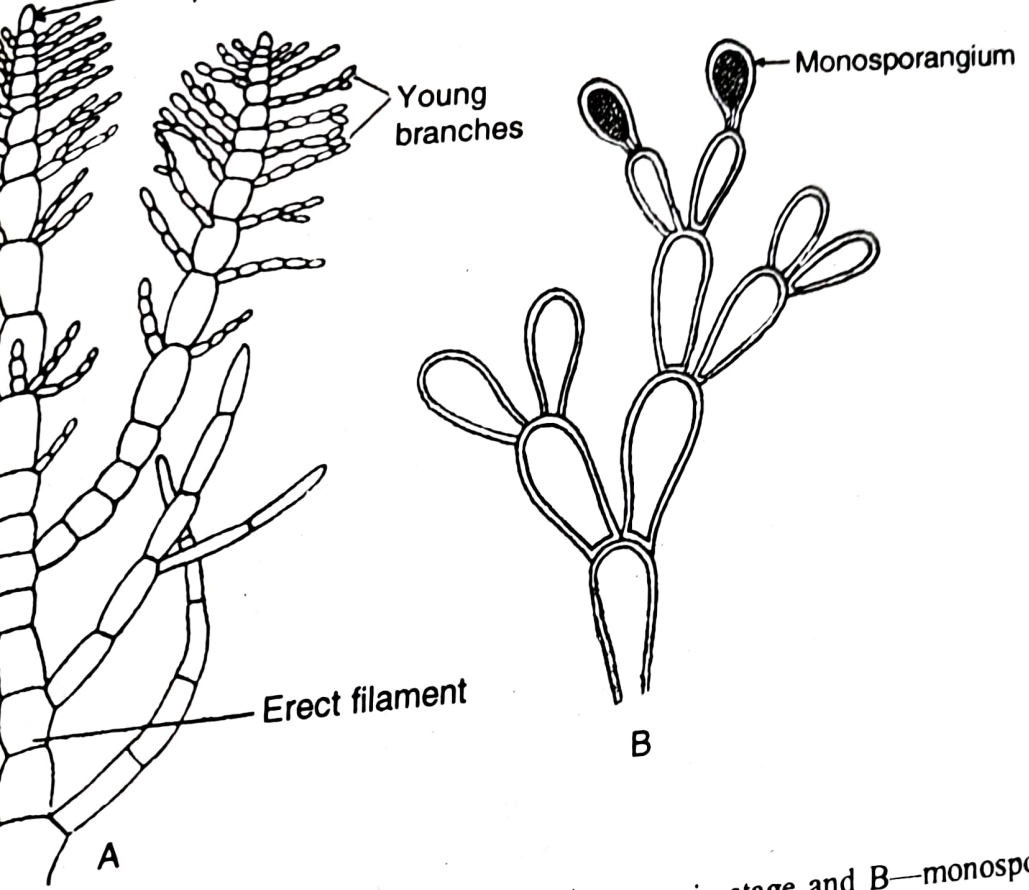
**Origin and origin of branches:** Both, axial filament and branch of unlimited growth arise from an apical cell by dividing transversely. As a result uniseriate row of cells is formed which soon differentiates into nodes and internodes. From the nodal cell, 4 to 6 lateral cells as lateral projections arise, each soon forms the septum and begins to form a branch of limited growth. These initials repeatedly divide and form clusters of limited growth.

## LIFE CYCLE

*Utrichospermum* reproduces by asexual and sexual means.

**Asexual reproduction:** During asexual reproduction, non-motile uninucleate monospores are produced singly inside the monosporangium. Monosporangia are produced only at the antrantia stage plants and on germination produce new plants.

**Sexual reproduction:** Sexual reproduction produces a new plant.



um. A—young plant germinating from chantransia stage and B—monosporan

Spermatangia are produced singly, in pairs or in groups of four al cells, the spermatangial initials, on branches of limited grow a small, colourless rounded structure which can be easily distinguish ls. The content of each spermatangium metamorphoses into a sin e spermatium (male gamete). The spermatia are released throug n the spermatangial wall.

e carpogonium arises terminally on a short 4 to 5-celled carpogo rises as a result of transverse division in the carpogonial initial e basal cell of the branch of limited growth. Each carpogonium ture differentiated into an upper enucleate long *trichogyne* an al base with a single and uninucleate egg. A median constriction nial base.

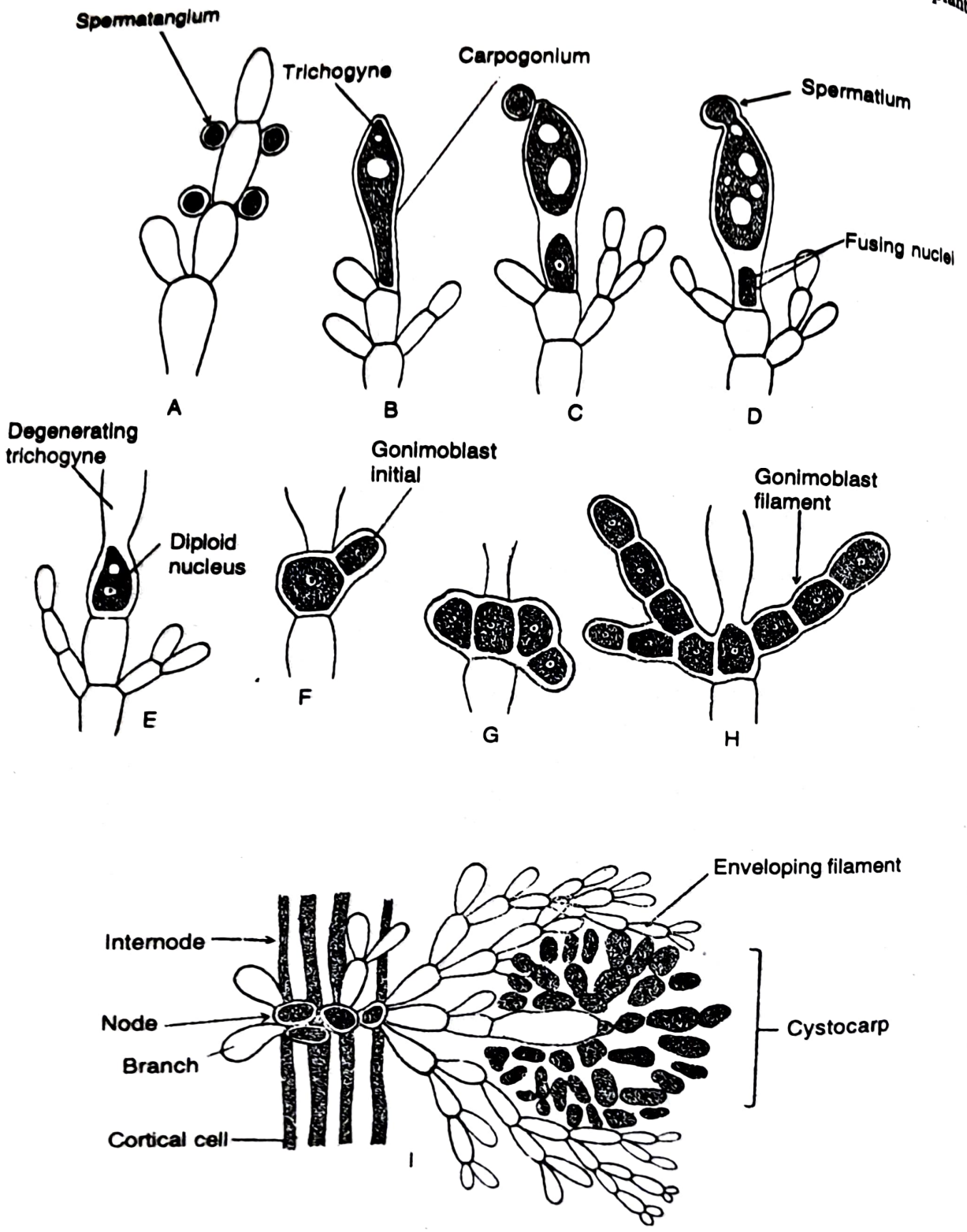
iberated spermatium is being carried away passively with w and gets attached to its tip. Soon, the wall of spermatium disso grates to the egg through the trichogyne. It fuses with the egg

s (Development of Cystocarp)

leus divides meiotically to form



are naked and non-motile. The cluster of gonimoblast filaments associated with carposporangia constitute the carposporophyte which grows as a parasite on female plant.



**Fig. 45.3.** Stages in the sexual reproduction of *Batrachospermum*. A—male branch showing spermatangia, B—female branch showing carpogonium, C, D—act of fertilisation, E to H—development of gonimoblast filaments and I—branch showing a cystocarp.

Meanwhile, and with the development of carposporophyte, the vegetative cells surrounding the carpogonia together sterile cells of carpogonial filaments form a sheath of branches enclosing the carposporophyte. Thus, a characteristic fruiting body, called

### Chantransia Stage

A zoospore germinates to form heterotrichous protonemal filament and thus constitutes a new stage in the life cycle of *Batrachospermum*. Because of its peculiar structure, it was formerly referred to as a new genus, *Chantransia*, and that is why considering its similarities this stage is called *chantransia stage* (Fig. 45.2 A). Chantransia thalli reproduce asexually and form monospores which in fact serve as an accessory means of multiplication. The asexual plant of *Batrachospermum* is formed as a lateral outgrowth from the chantransia filament. It is generally interpreted that of a plant, chantransia filament constitutes prostrate habit and *Batrachospermum* proper filament to erect system, thus, in all forming heterotrichous habit.

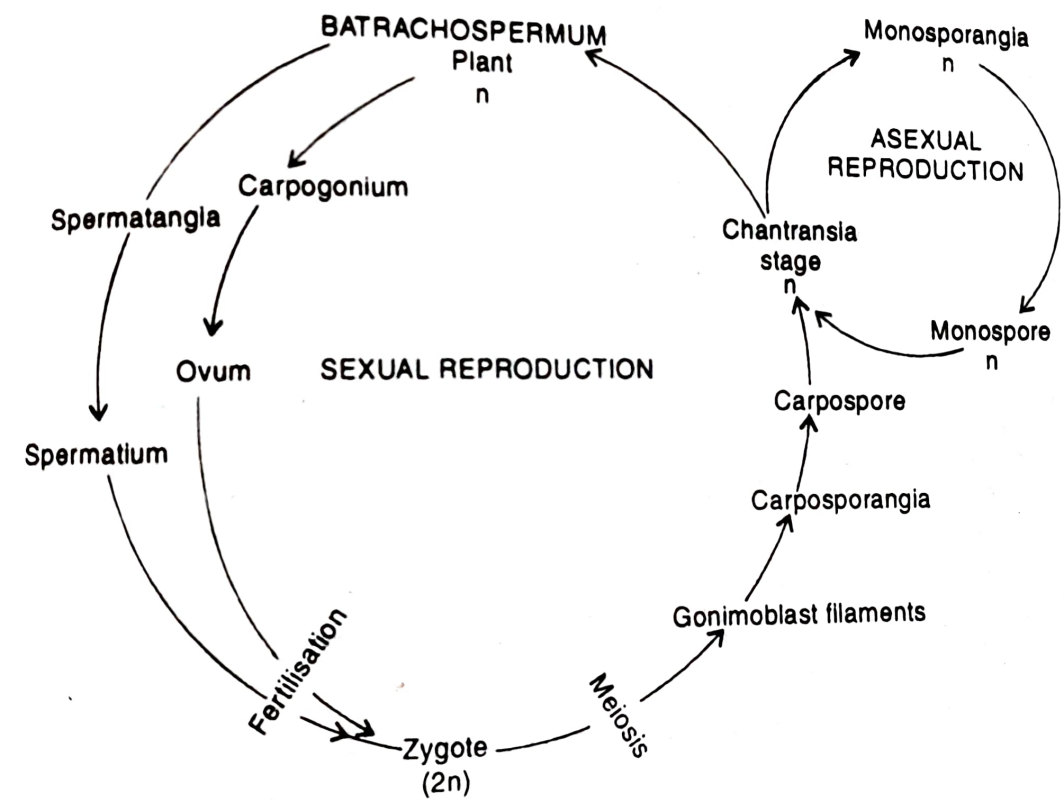


Fig. 45.4. Graphic representation of life cycle of *Batrachospermum*.

Stosch and Theil (1979) reported a new mode of life cycle in the alga and found that at least in one species meiosis takes place in the apical cells of diploid microthallus (*Audouinella* or *Chantransia* phase). Balakrishnan and Chaugule (1980) while working on *B. abalshwarensis* have supported to this new mode of life cycle. Thus, in such species zoospores are not formed meiotically, rather, these remain diploid and produce diploid microthallus (*Chantransia* stage).