

ACCORDING TO THE SOIL
SPECIALIZATION...)))

(And some botanical
science...)

Chamaedaphne *calyculata*



Ericaceae family:



Andromeda sp.



Calluna sp.

Ericaceae family:



Vaccinium...

Chamaedaphne *calyculata*



Herbarium Universitatis Mosquensis (MW)

Herbarium Univ. Mosquensis
MW 0 465 624

Herbarium Universitatis Mosquensis (MW)

Chamaedaphne calyculata (L.)
Moench

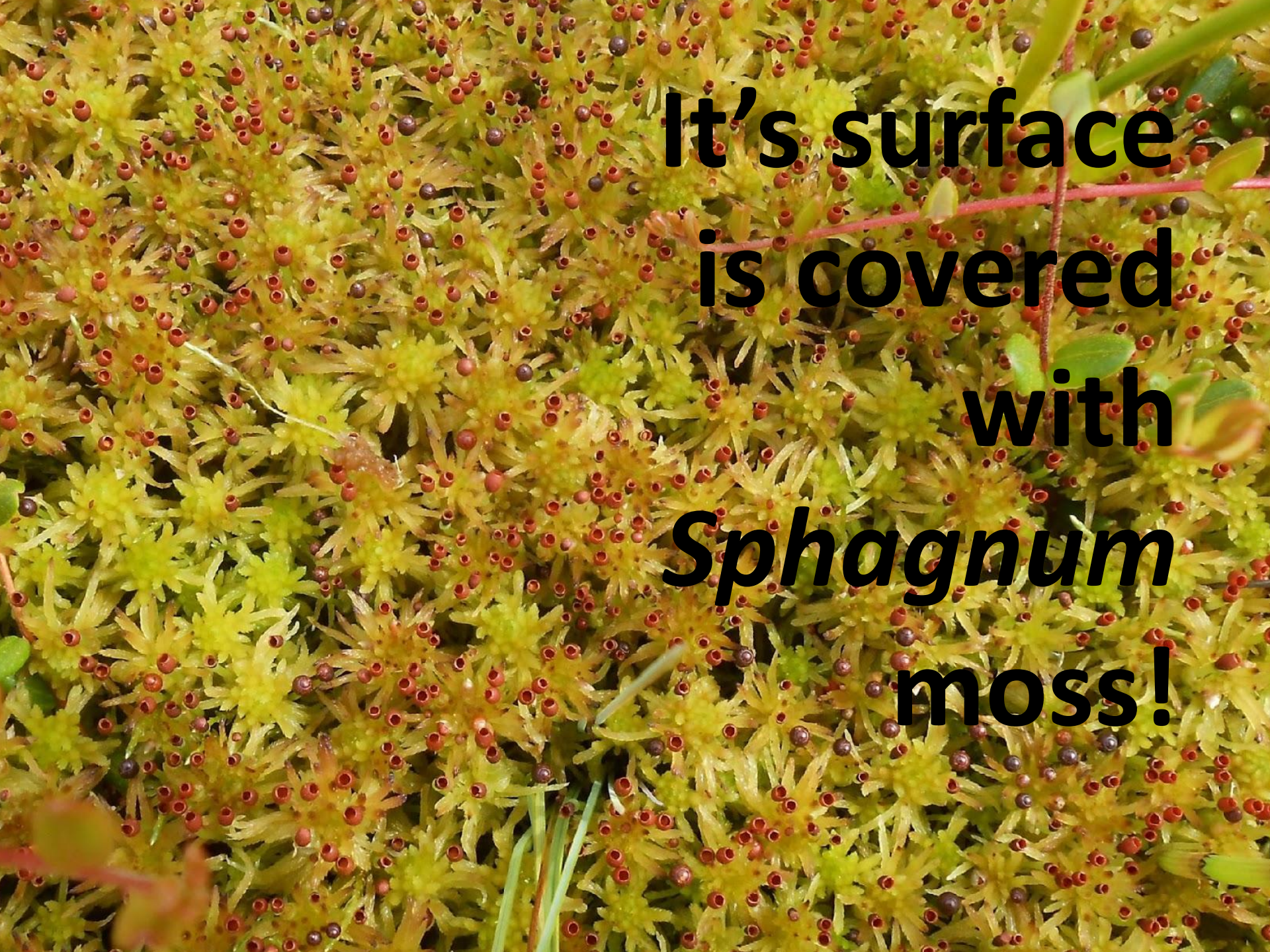
Вологодская обл.
Кирилловский район.
3 км зап. д. Кочевино, 200 м
от сев. берега Лендомского озера.
Переходное болото.
12 августа 1994 г. Н.Афанасьева

6200

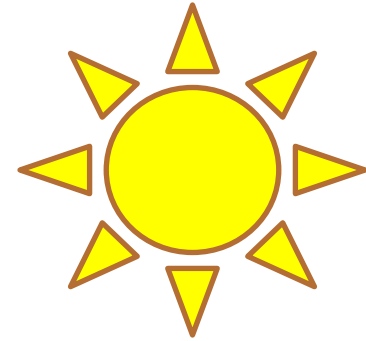
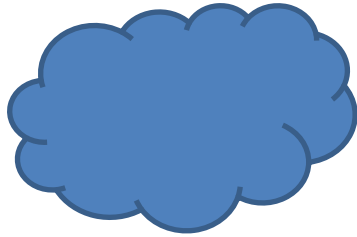
Plants of the olygotrophic swamps

An olygotrophic swamp



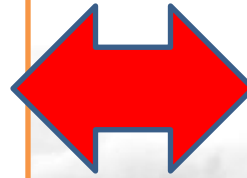
A close-up photograph of a dense carpet of Sphagnum moss. The moss is a vibrant yellow-green color, and its surface is covered with numerous small, reddish-brown capsules, which are the developing spore cases. The capsules are scattered across the entire surface, creating a textured, speckled appearance. The moss itself has a fine, needle-like structure. In the background, some green leaves and a thin red stem are visible, providing a contrast to the moss.

**It's surface
is covered
with
Sphagnum
moss!**



- There are a lot of ecological factors, which is *Chamaedaphne* affected by.

Moisture



Drought

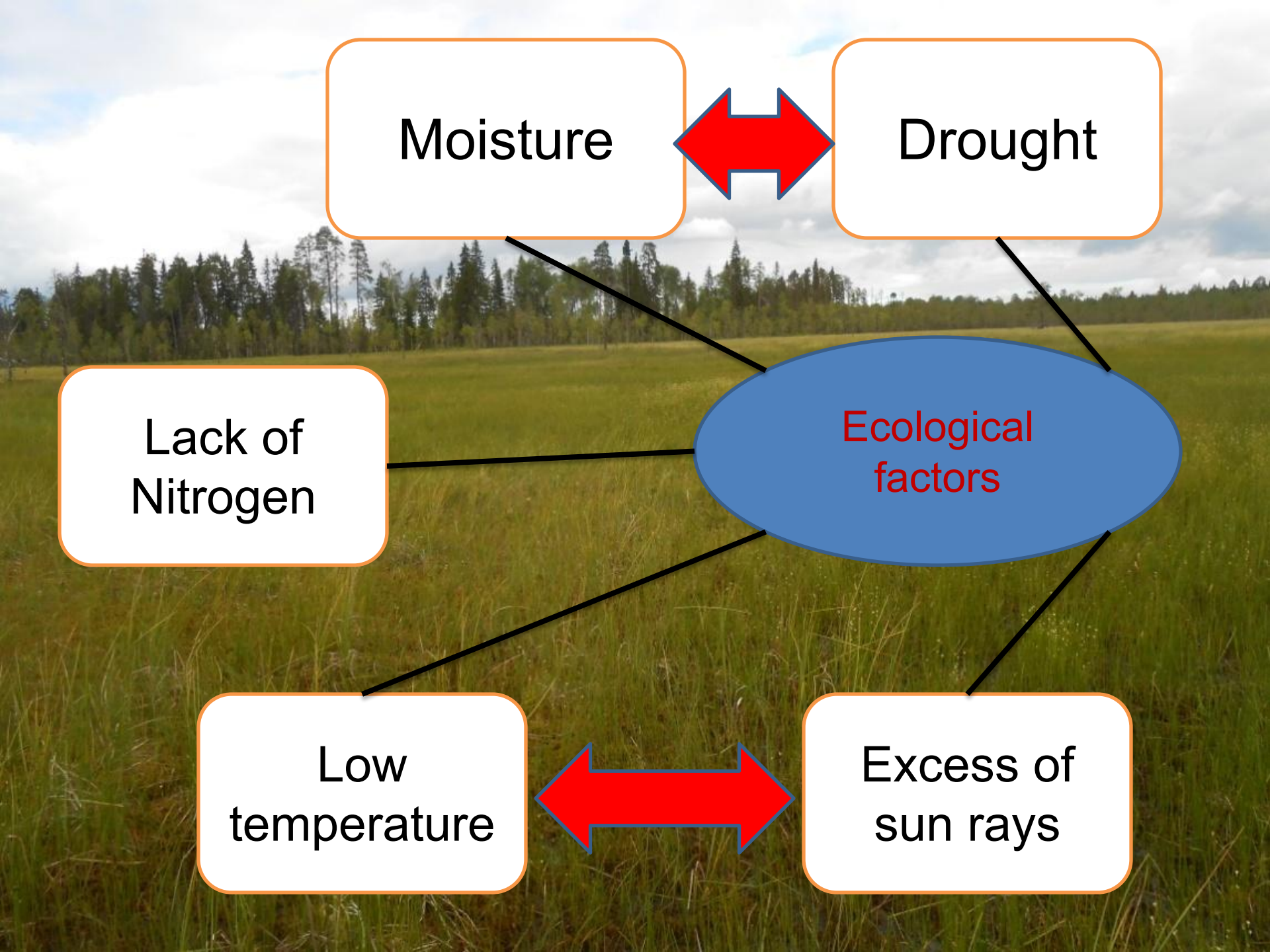
Lack of
Nitrogen

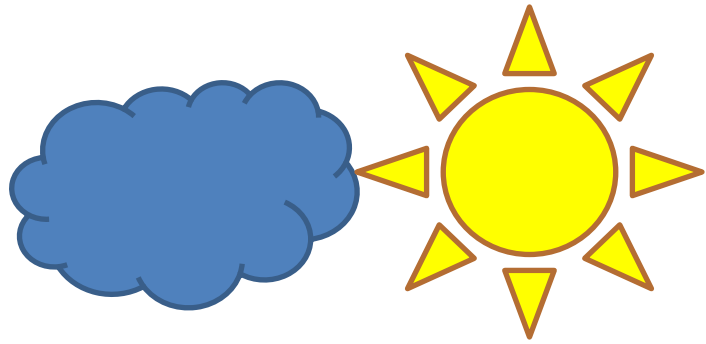
Ecological
factors

Low
temperature

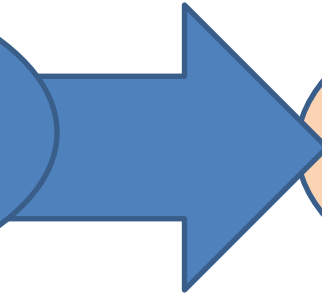


Excess of
sun rays





Ecological
factors



Special
characteristics



- Due to such severe conditions, plants of swamps, or OXYLOPHYTES as *Chamaedaphne*, have some special characteristics.

1. The leaves



Drought

Фото Е. Пуниной

Drought

The leaves



The leaves



Drought

Excess of
sun rays

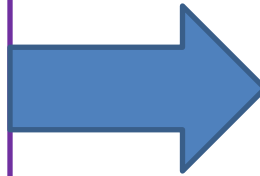
leaves of *Andromeda*
are placed at an angle to the horizon.



Excess of
sun rays

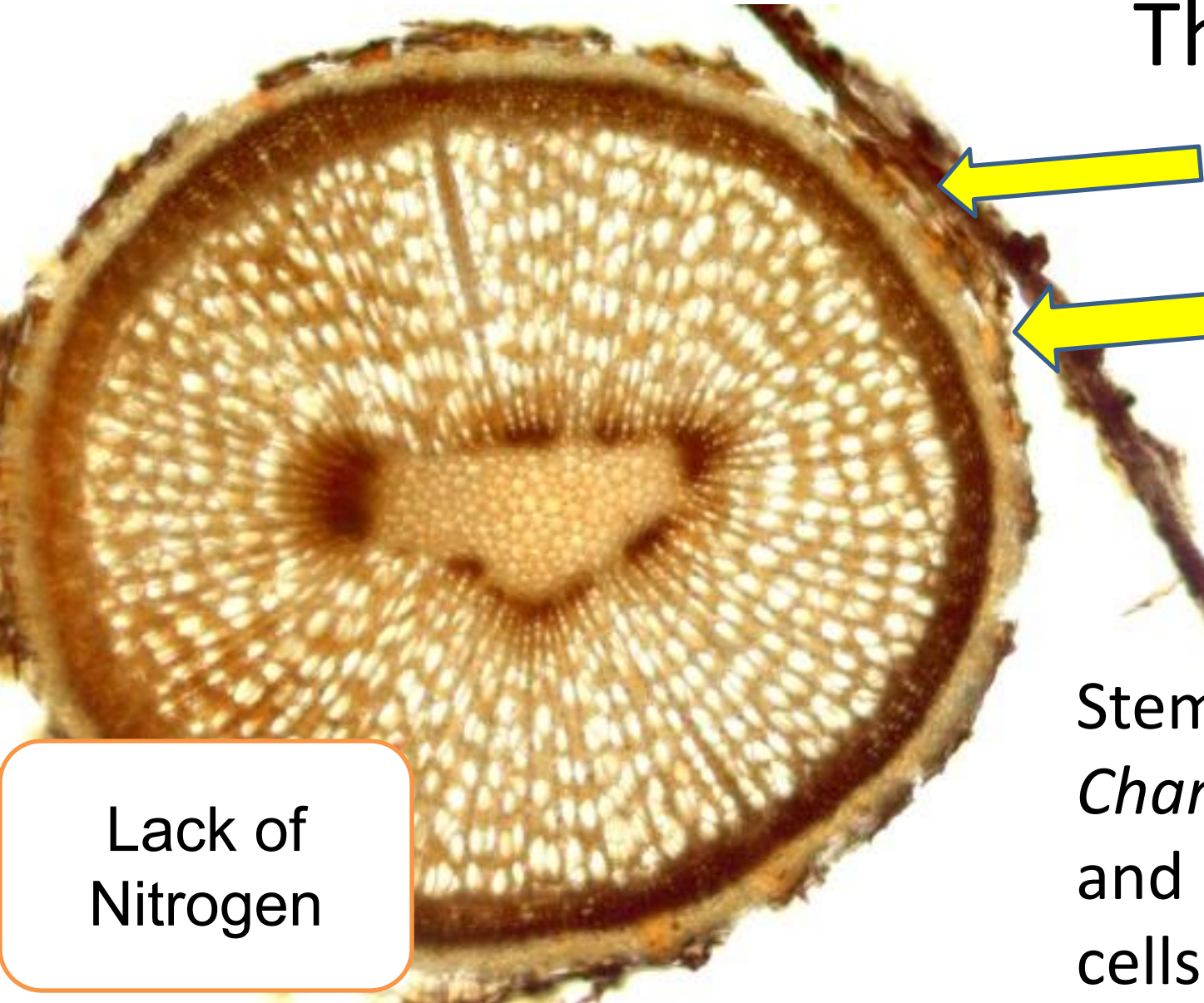
2. The stem

FELLOGENE
cells



FELLEM, or
CORK

Lack of
Nitrogen



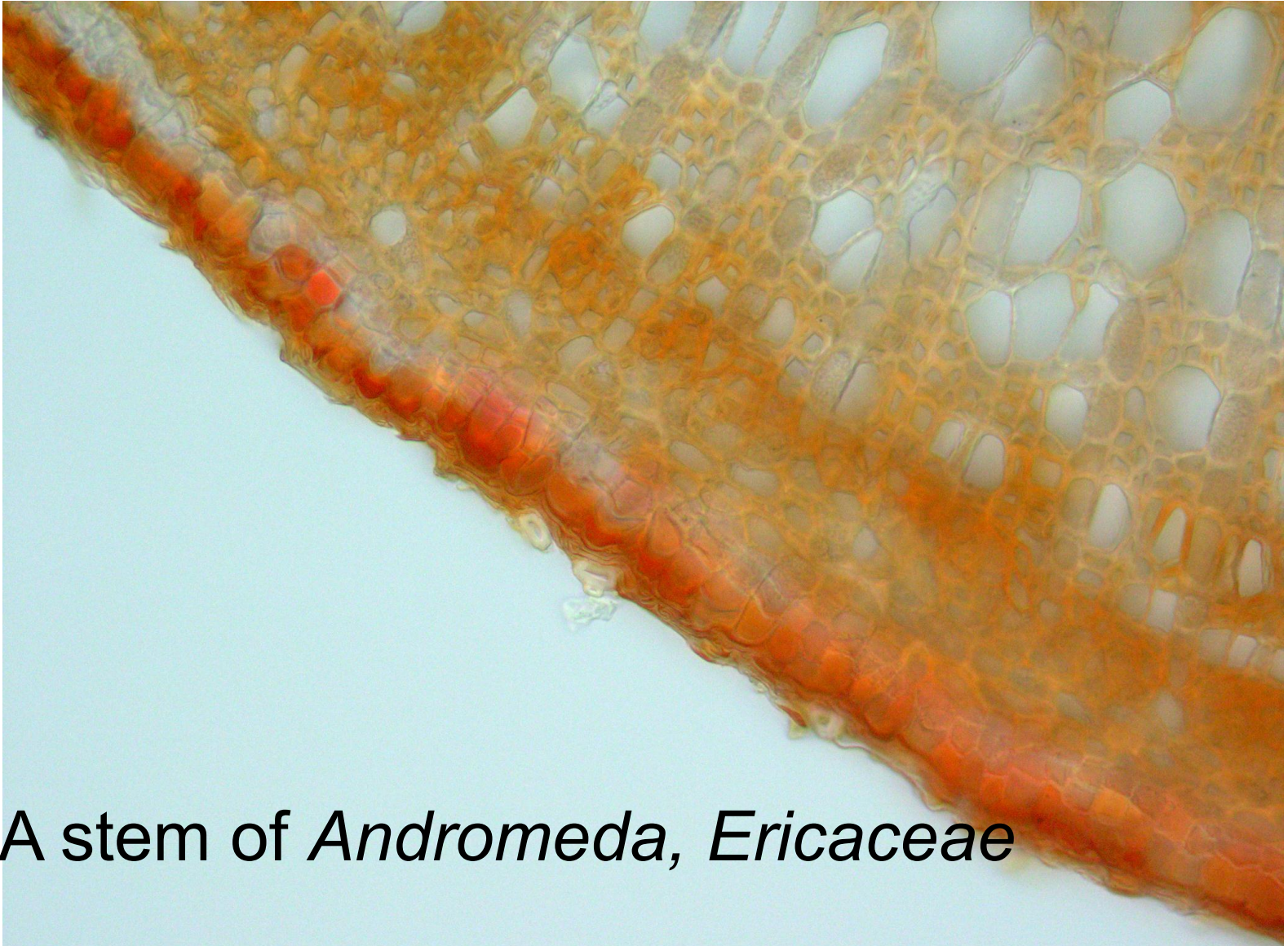
The stem



Lack of
Nitrogen

Stem of
Chamaedaphne,
and FELLOGENE
cells

The stem. Tannins in the cork



A stem of *Andromeda*, *Ericaceae*

-has some special cells,
which produce fellein.

1. Lack of nutrition

- Olygotrophic swamps are water reservoirs which are poor with organic matter, actually with nitrogen compounds.

- For example, plants of *Ericaceae* family –



- *Andromeda
polifolia*,
- Подбел
многолистный,



*Chamaedaphne
calyculata, ...*
...Мирт
болотный,...

- These cells, or FELLOGENE cells, also are A BORDER between a stem and some outer tissues, which are to be separated from the stem.
- Эти клетки, или клетки ФЕЛЛОГЕНА, также находятся на ГРАНИЦЕ стебля и других тканей коры, которые затем отваливаются от стебля.

- So the parts of tissues located ABOVE the FELLOGENE separate from the stem. It leads to decrease in nutrition losses during growing season.

2. Low temperature

- These swamps are regions with relatively low-temperated soil.
- Олиготрофные болота – зоны со сравнительно низкой температурой почвы.

- It influences badly on roots, because **absorption** of water is complicated.
- Это плохо влияет на корни, т.к. **всасывание ВОДЫ** [при низких температурах] затруднено.

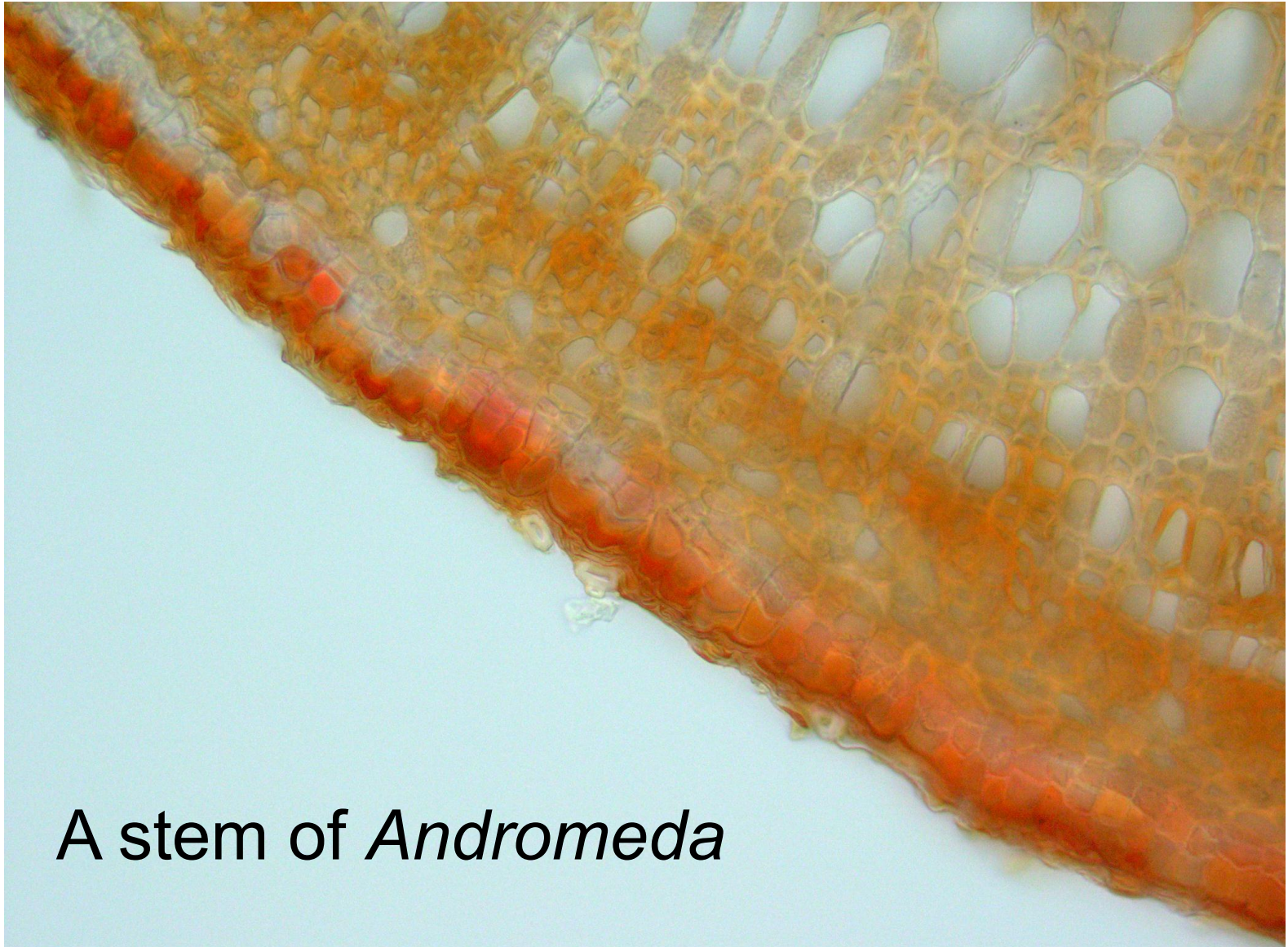
- On the other side, the sun rays reach plants very fast, which makes all the aerial runners warmer.



But leaves of *Chamaedaphne* (*mupm*) also have double layers of photosynthetic tissue to accumulate more sun rays.

- As a result, subterranean organs of OXYLOPHYTES are subjected to cold, but aerial ones are overheated.

Tannins in the cork



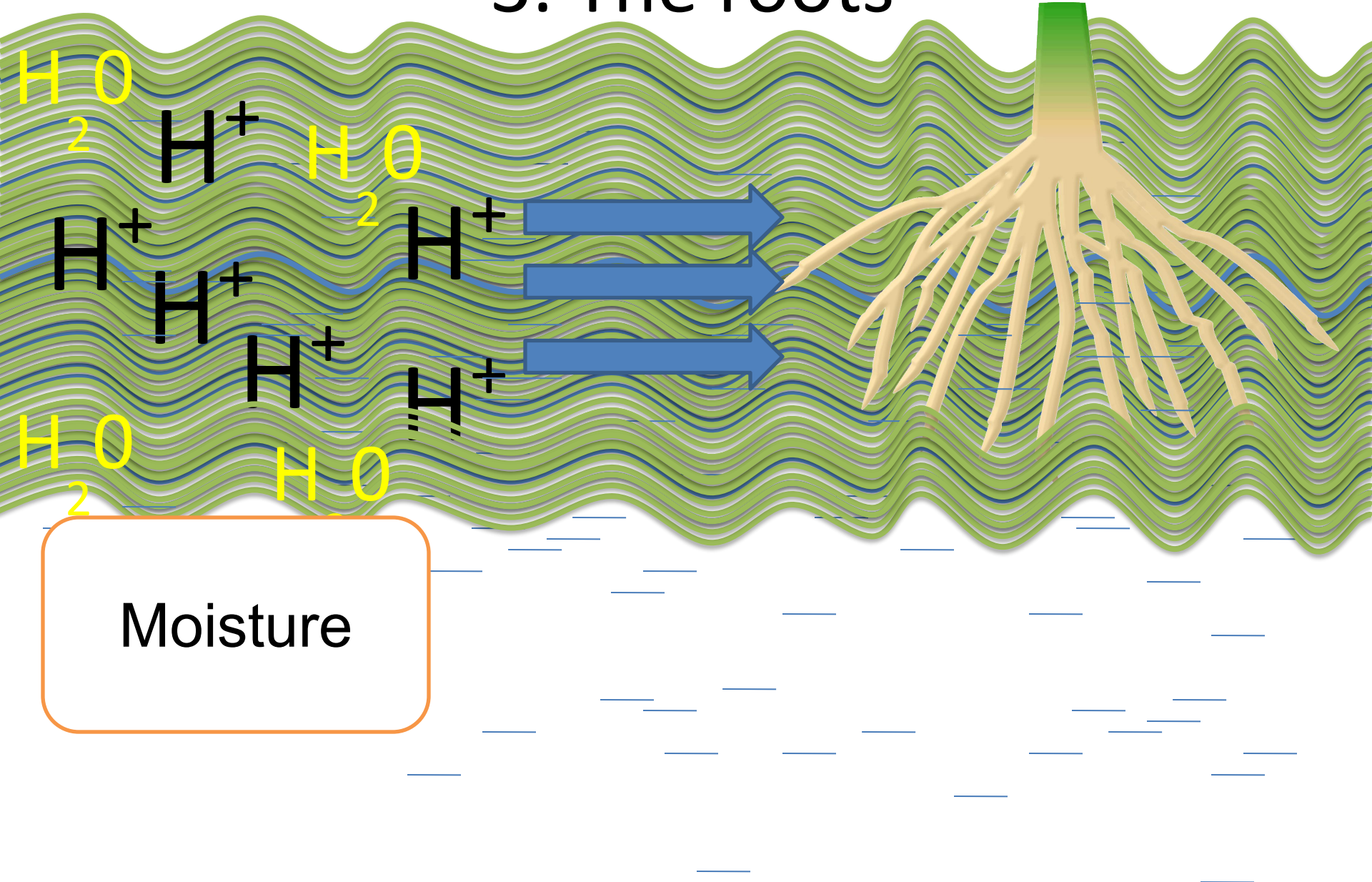
A stem of *Andromeda*

- It contributes to decrease influence of solar rays.

3. Water excess

- Finally, the soil of
olygotrophic swamps is
very MOISTENED, so
athmosphere OXYGEN can
not penetrate through it.

3. The roots

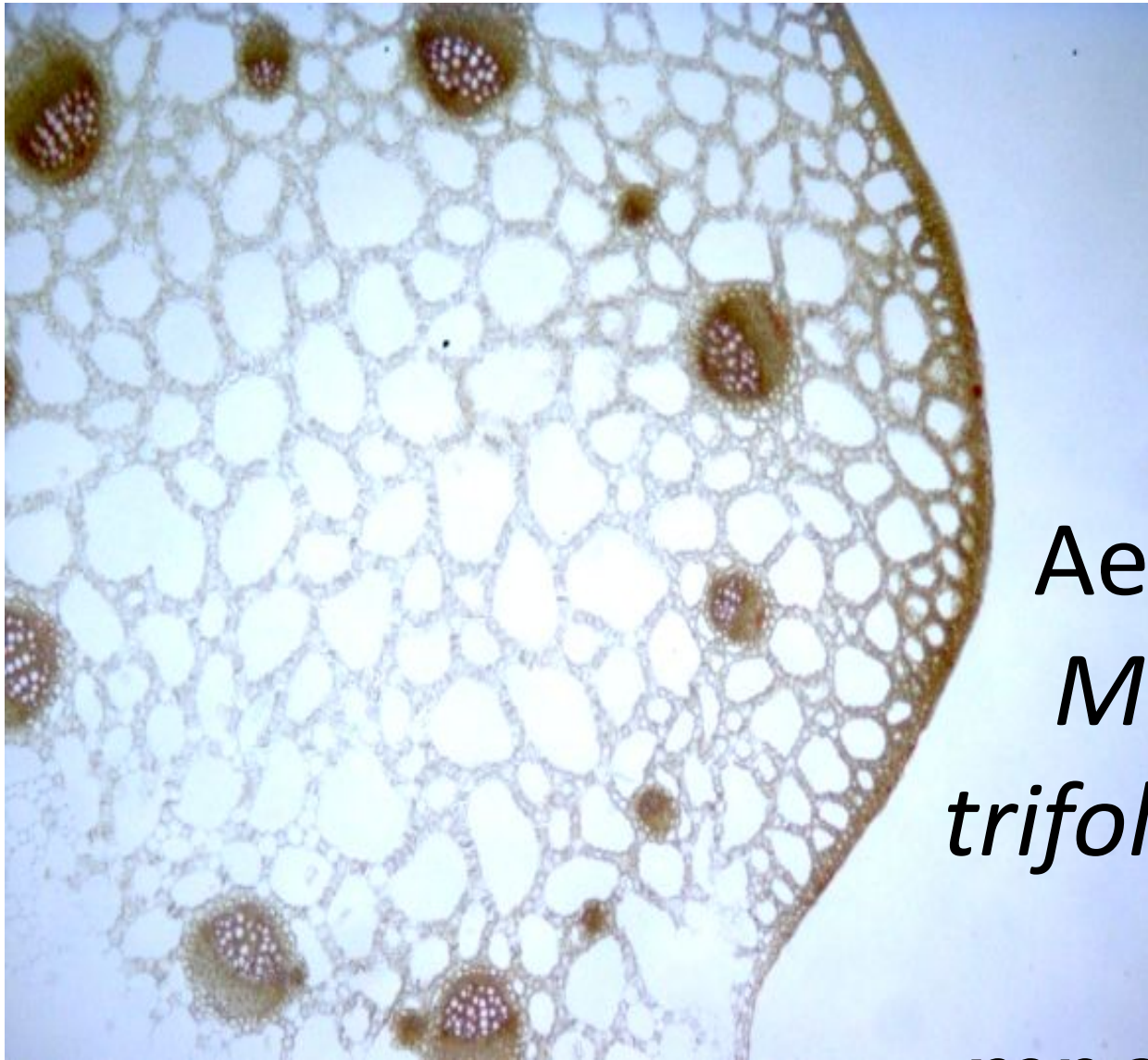


- According to this, roots do not get enough oxygen for respiration.

- And OXYLOPHYTES have some adaptations for breath:
- They possess special tissue termed AERENCHIMA. It contains cells and plenty of air cameras!



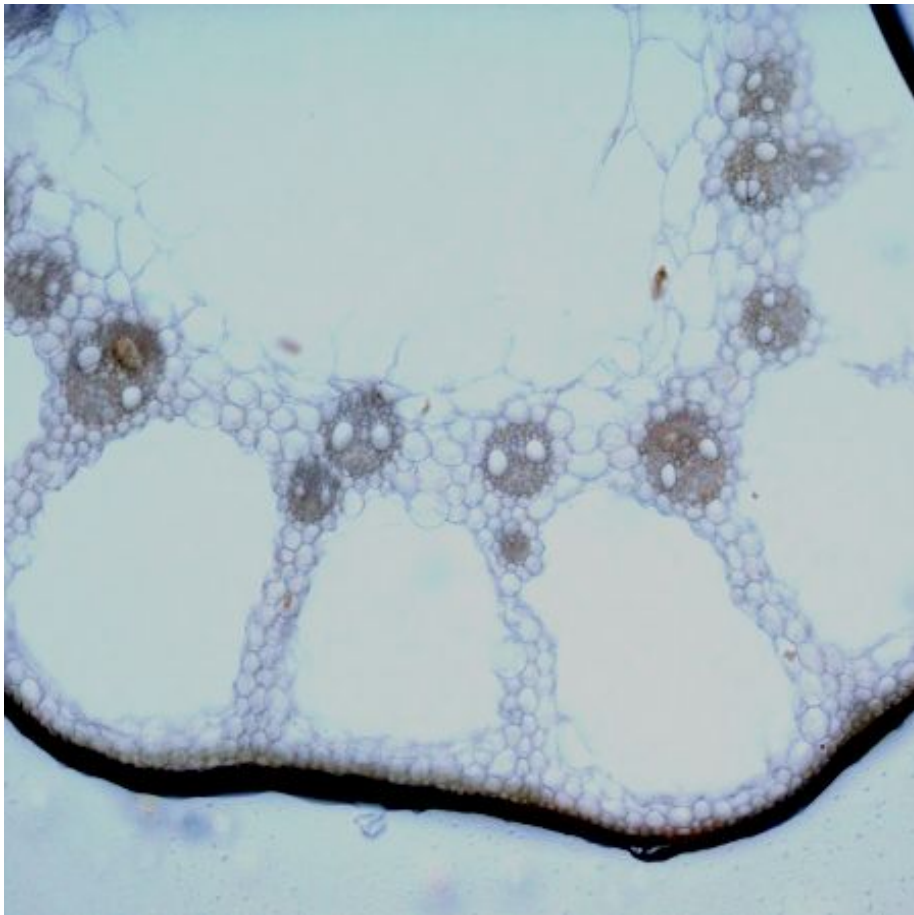
Вахта
трехлистная



Aerochima in
Menyanthes
trifoliata rhizome
(вахта
трехлистная)

Aerochima of *Eriophorum* (пушица):

stem



leave

- There are much more ecological factors, which influence on the OXYLOPHYTES; these factors caused evolutionary adaptations in plants.

- So the plants of oligotrophic swamps are adapted to high and low temperatures, lack of nutrients and oxygen.



- (that was a leafstalk of *Commarrum palustre*)