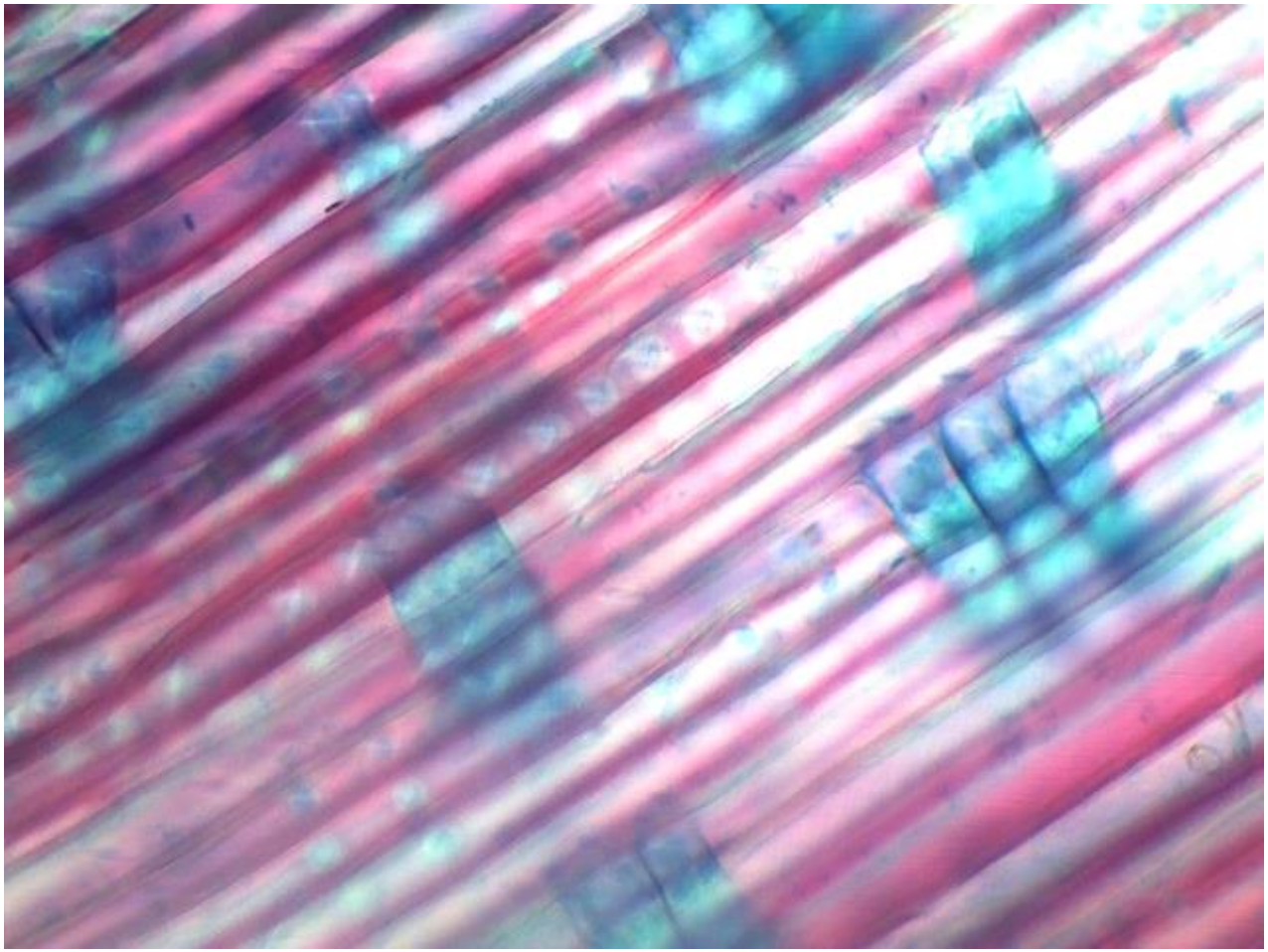
B.Sc. III Spotting Slides and specimens 2016-17

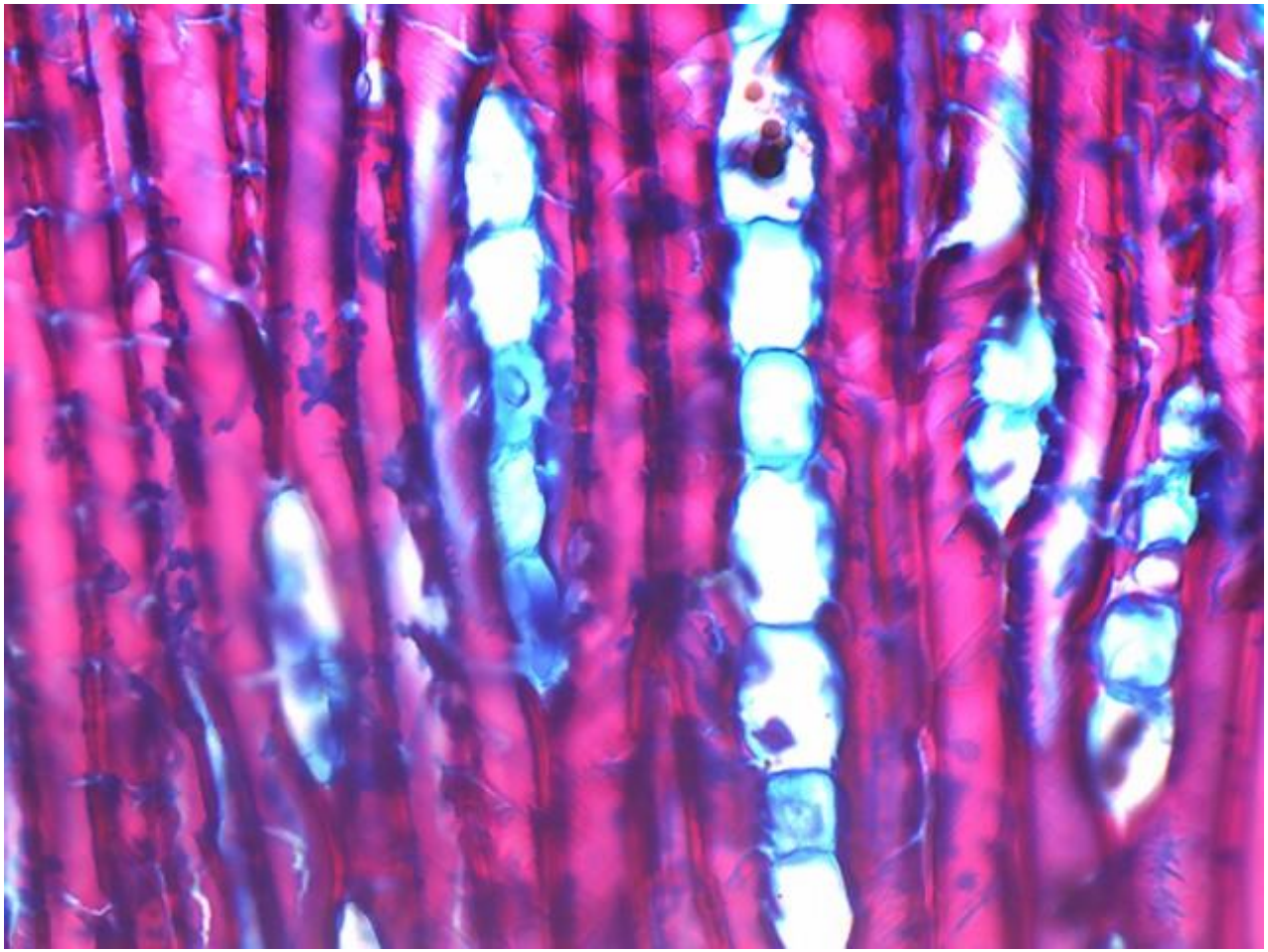
www.cmpcollege.com

e-learning section

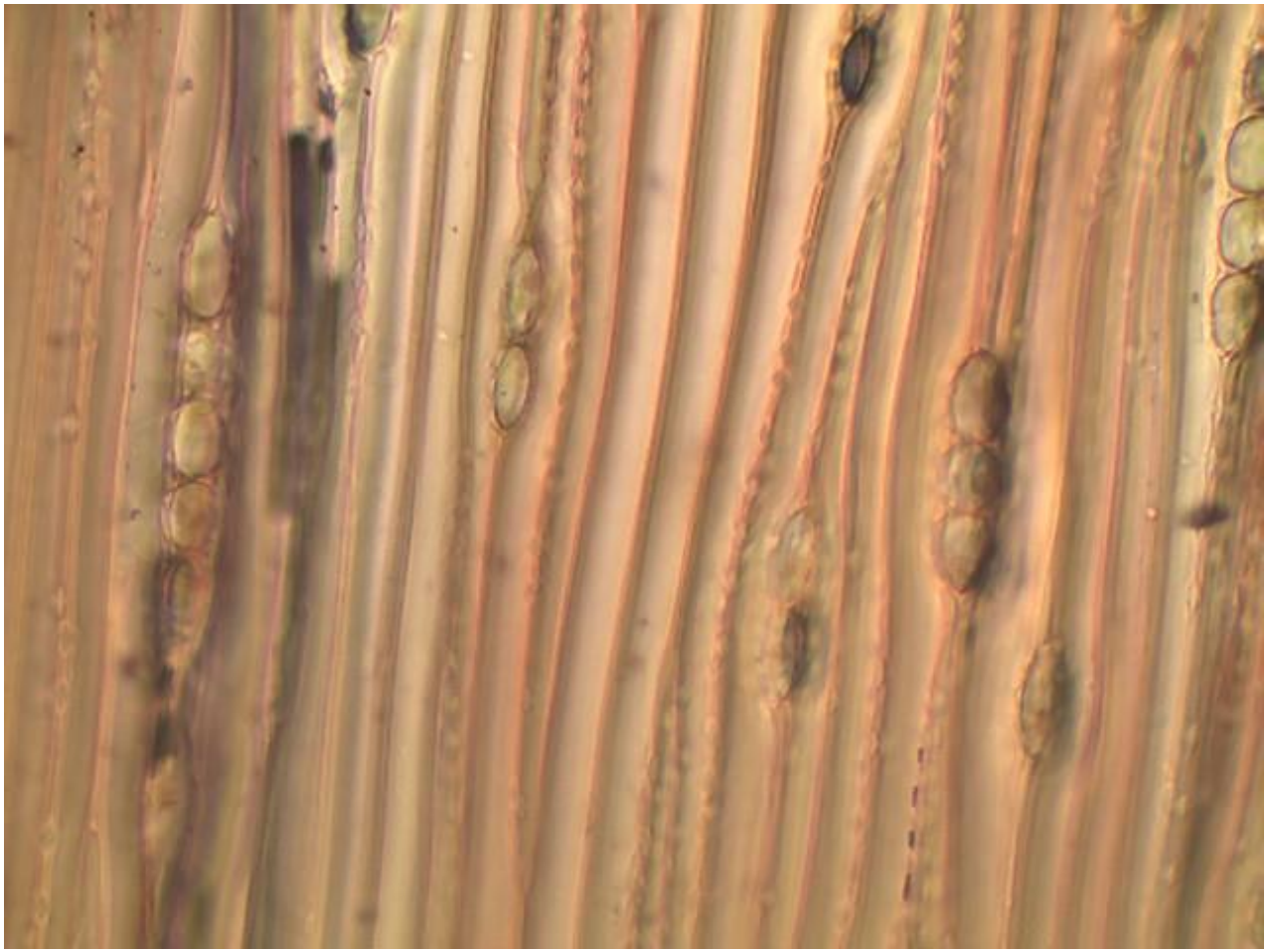
TS of *Thuja* Stem



RLS of *Thuja* Stem

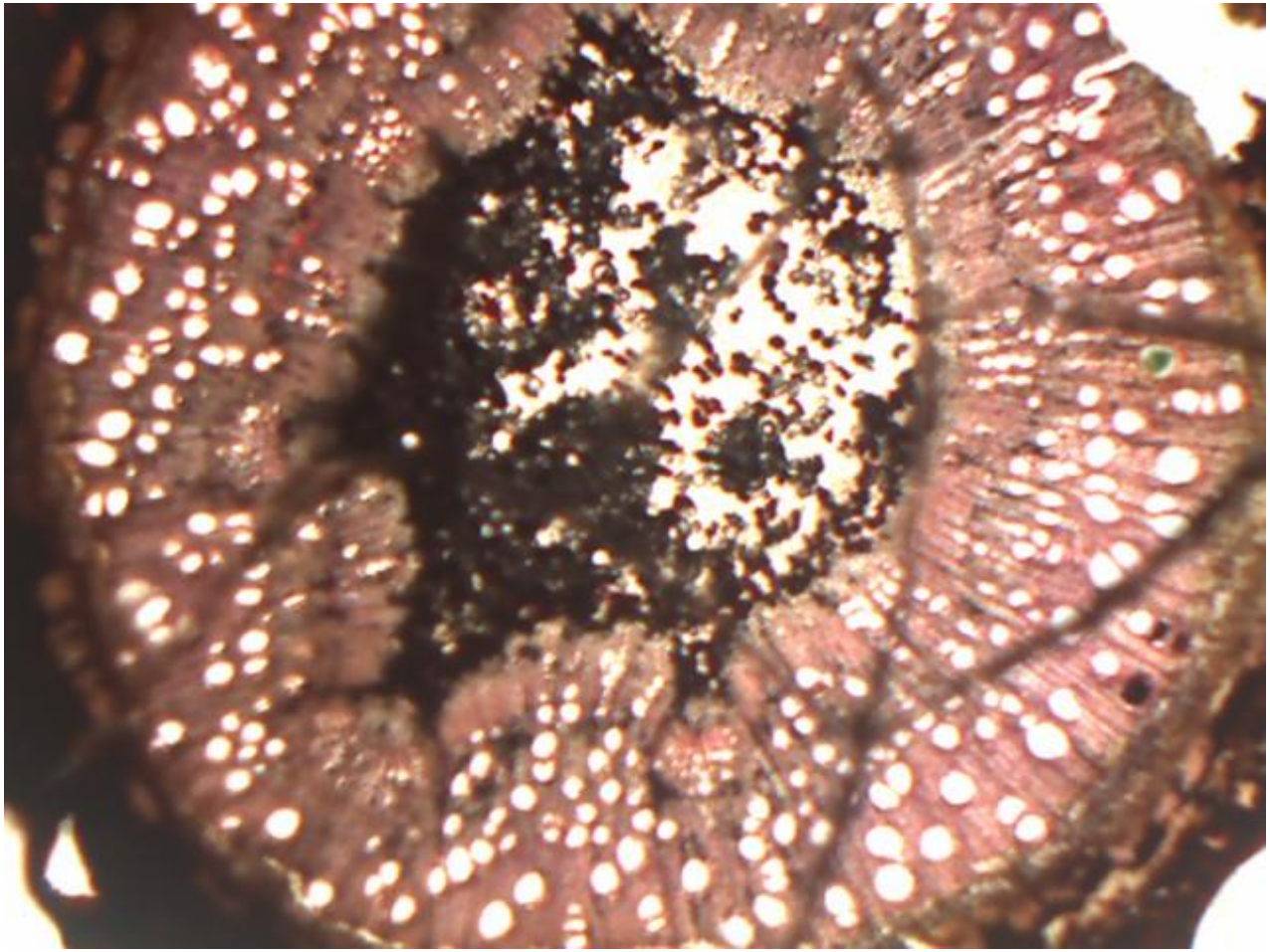


TLS of *Thuja* Stem



TLS of *Dalbergia* Stem

Dalbergia TS

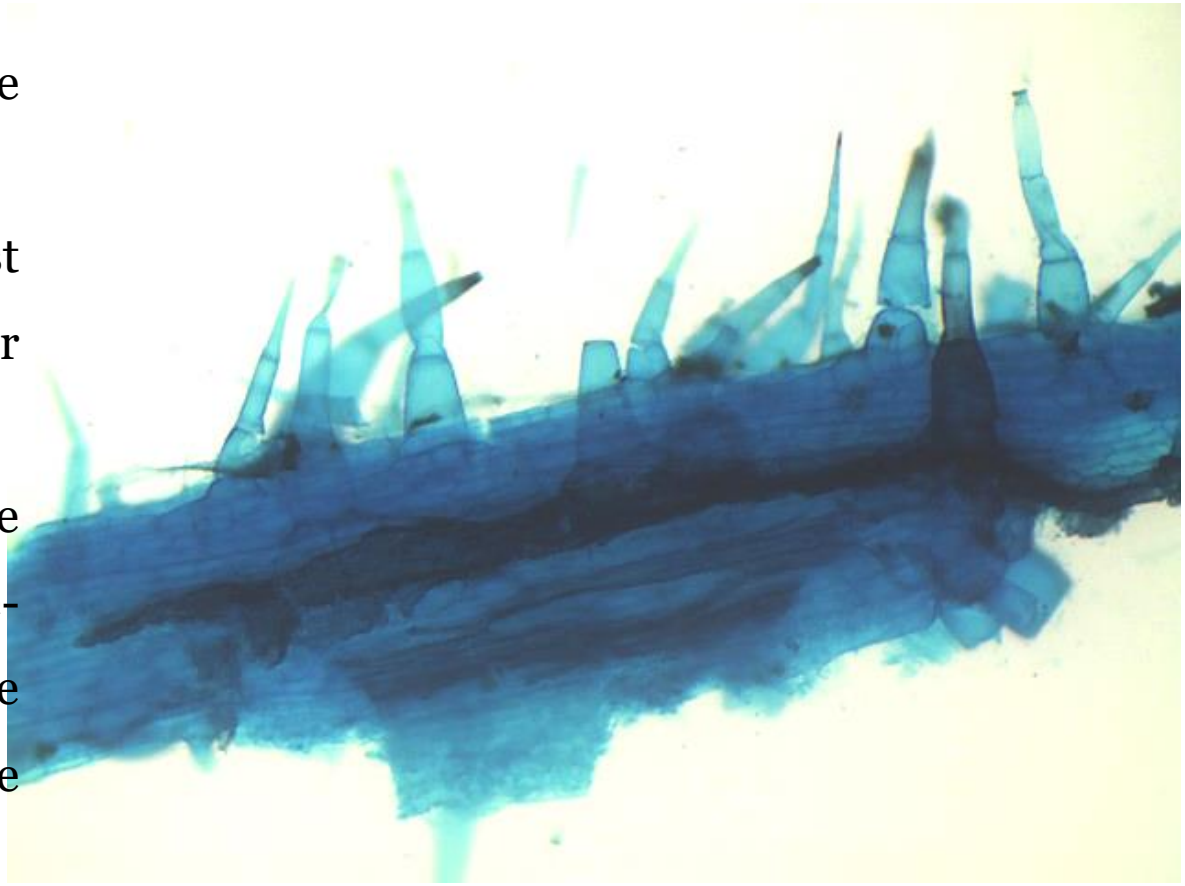


Multicellular.

The unicellular hairs may be un-branched or branched.

Multicellular hairs may consist of a single row of cells or several layers.

Some multicellular hairs are branched in dendroid (tree-like) manner; others have branches oriented largely in one plane (stellate hairs.)



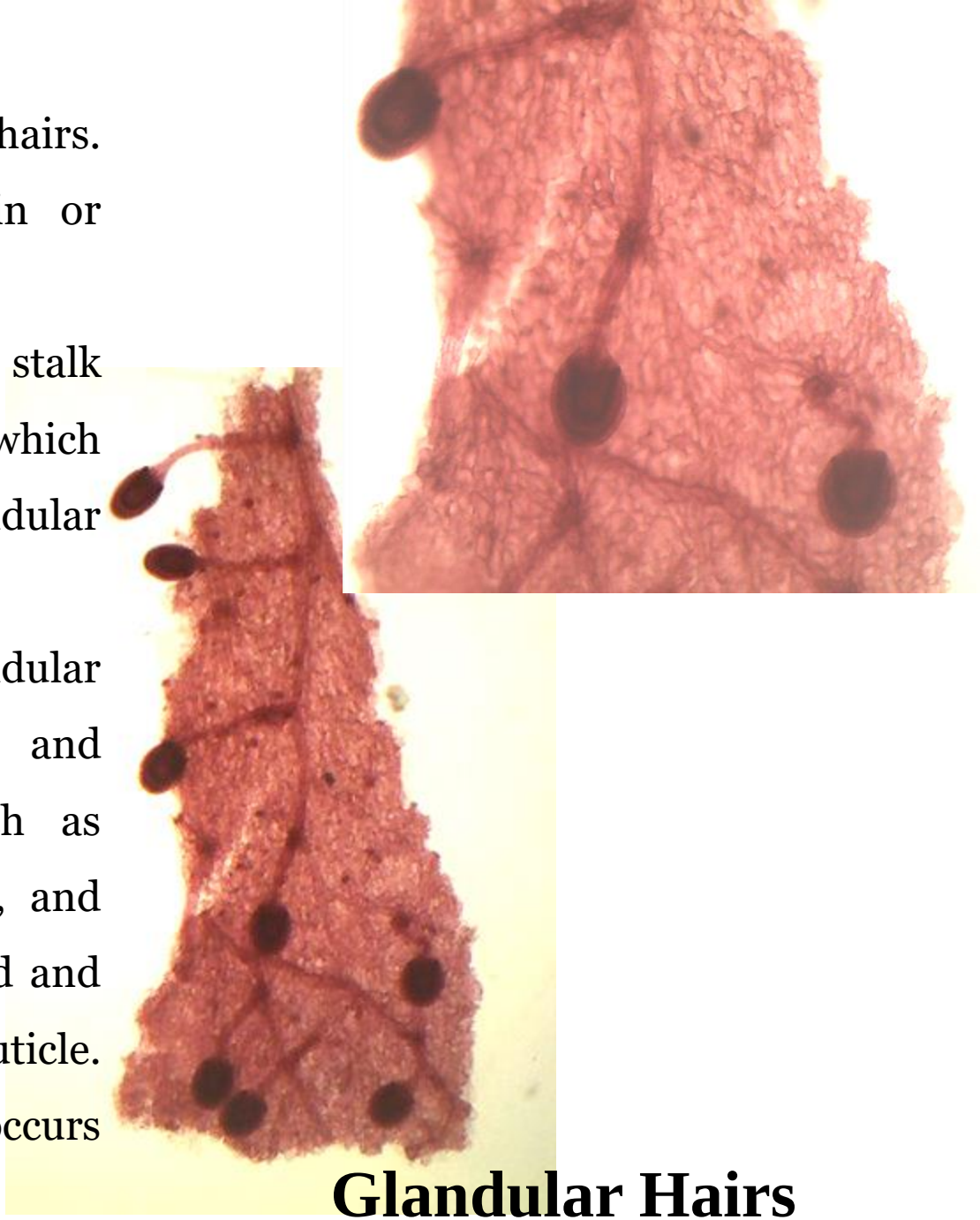
Multicellular Hairs

Glandular Hairs:

Many plants possess glandular hairs. These hairs may secrete oil, resin or mucilage.

A typical glandular hair possesses a stalk and an enlarged terminal portion, which may be referred to as gland. The glandular hairs may be uni- or multicellular.

Active secretory cells of glandular trichomes have dense protoplasts and elaborate various substances, such as volatile oils, resins and mucilage's, and gums. These substances are excreted and accumulate between the walls and cuticle. Their final removal from the hair occurs by rupture of the cuticle.



Glandular Hairs

Stellate hair:

Stellate hair are star shaped non glandular hair found in leaf epidermis of Alkali mallow "Sida Plant"

Stellate Hairs

Stinging Hairs:

They are one of the most interesting types of the trichomes.

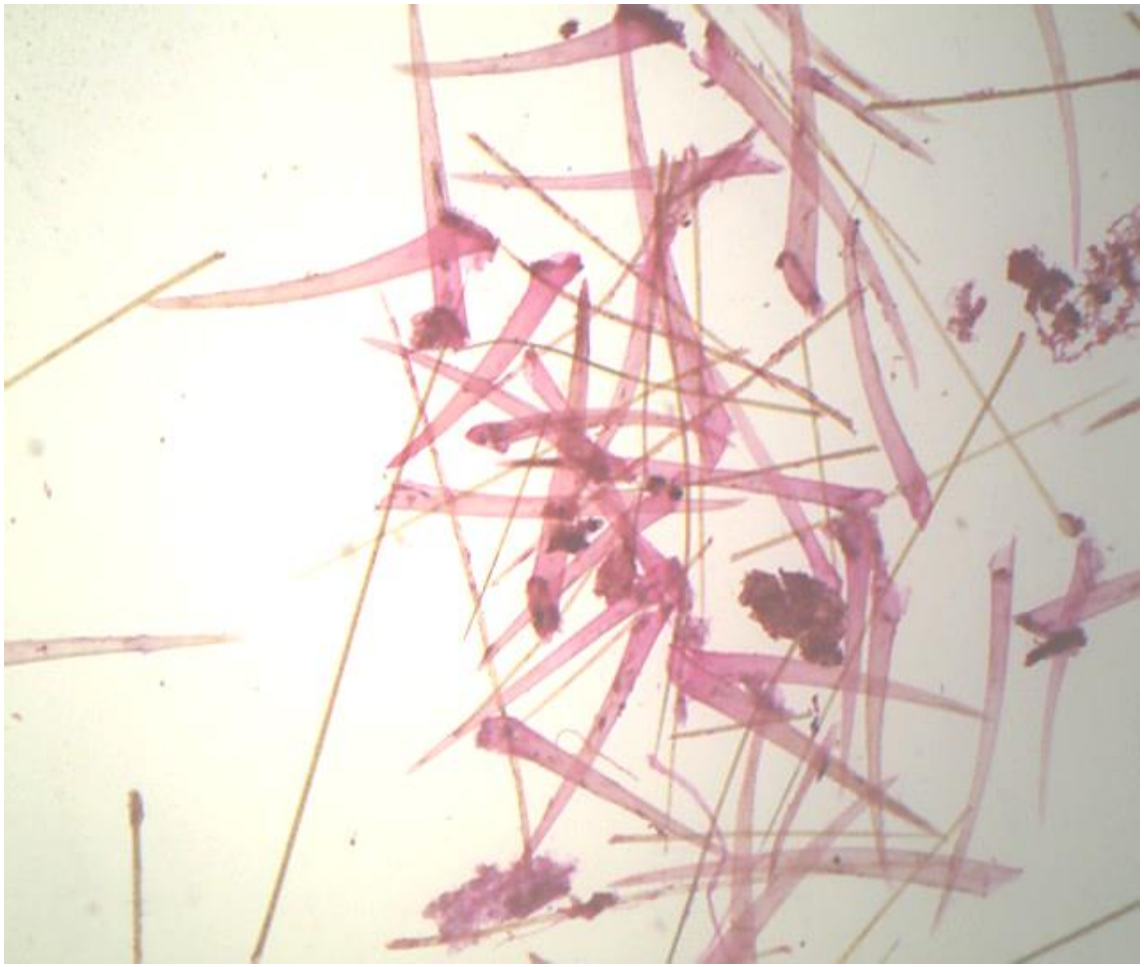
It contains a poisonous liquid and consists of a basal bulb like portion from which a stiff, slender and tapering structure is given out. This tapering structure ends in a small knob like or a sharp point.

The tip is usually somewhat oblique, and as the body of an animal or human being comes in its contact with some force, the tip is broken off, and the sharp pointed end readily penetrates the skin of the animal, and fluid is being transferred from the basal knob of the hair to the body of the animal.

Stinging Hairs

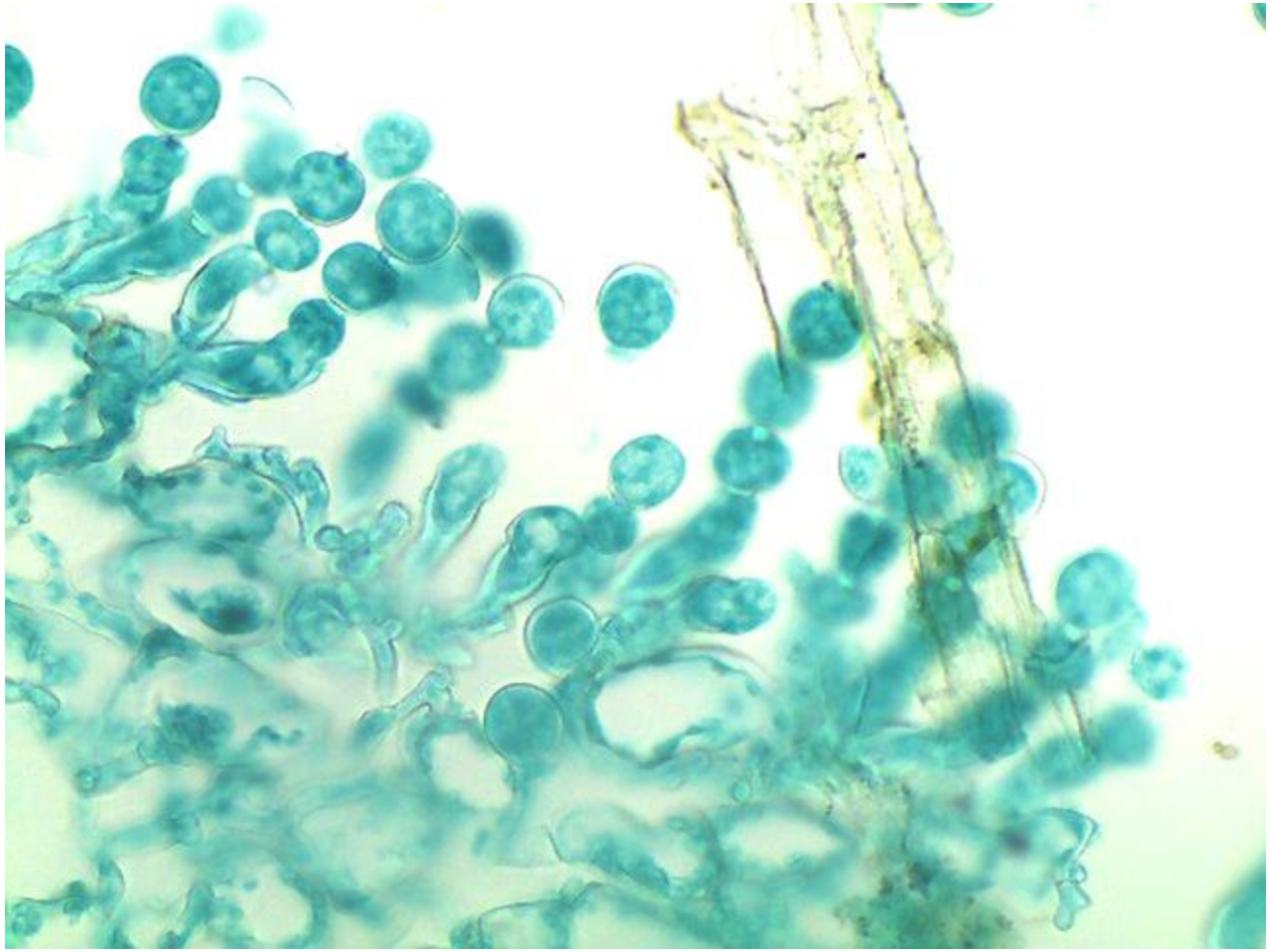
Stellate hair:

- Unicellular hair are found in root
- The epidermal hair elongates to form unicellular hair
- The unicellular hair may be short, long or coiled.
- Some hairs are branched or some are unbranched.
- Eg, *Gossypium*, silicified hair of *Cannabis* and root hair.

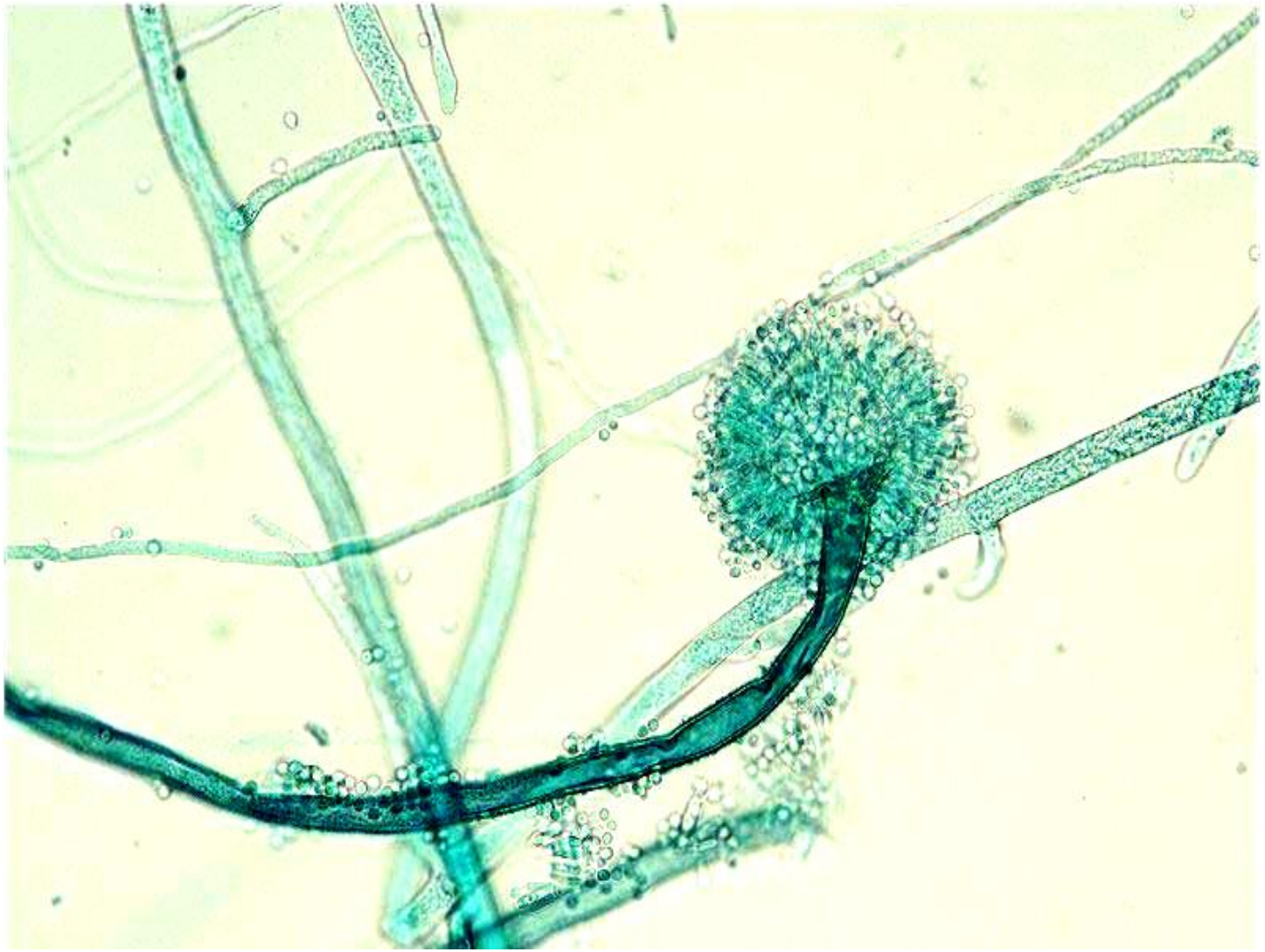


Unicellular Hairs

- It causes **white rust of crucifers.**
- The mycelium is non septate present in the intercellular spaces
- Conidiophore are club shaped, parallel arranged.
- Conidia are arranged in basipetal succession

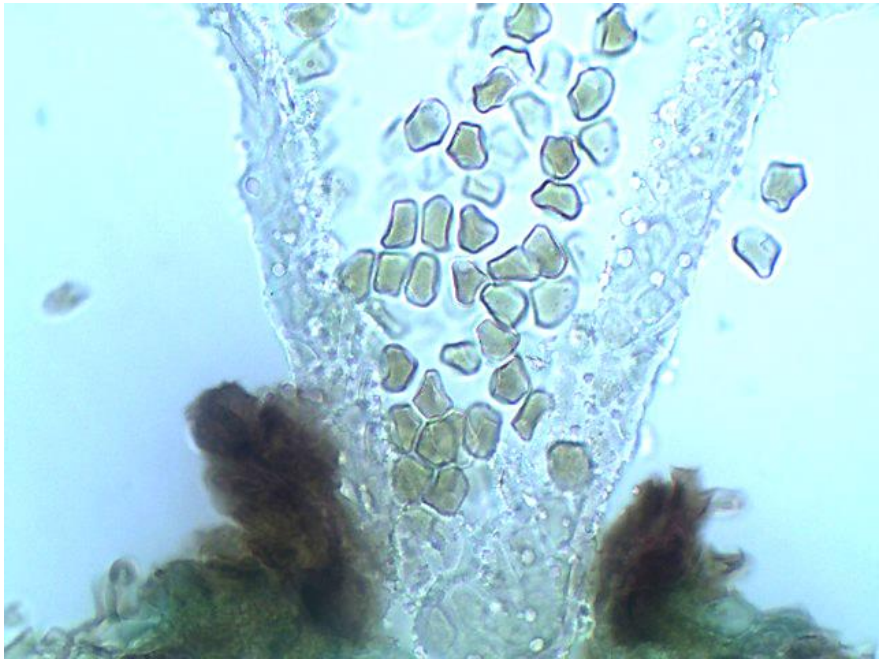


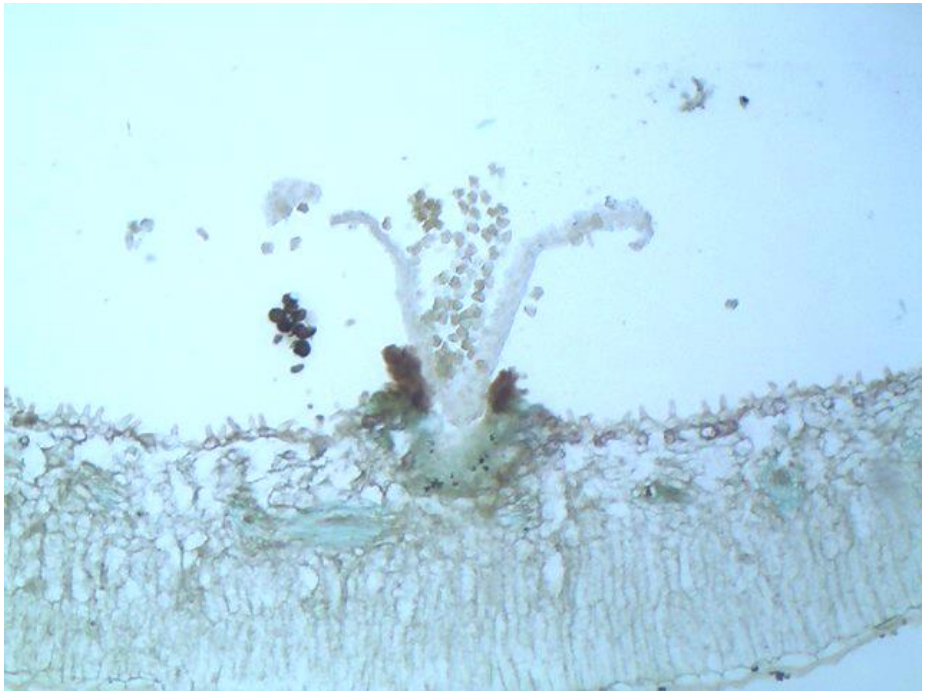
***Albugo* Conidial Stage**



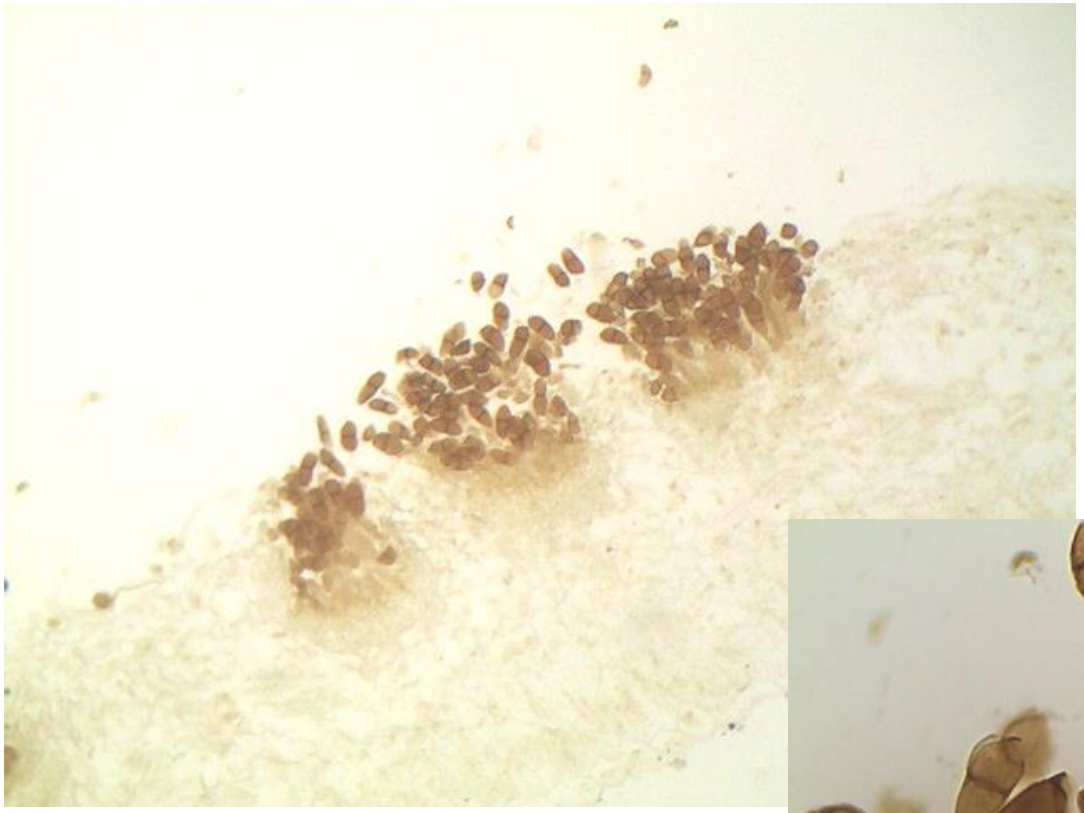
***Aspergillus* Conidial Stage**

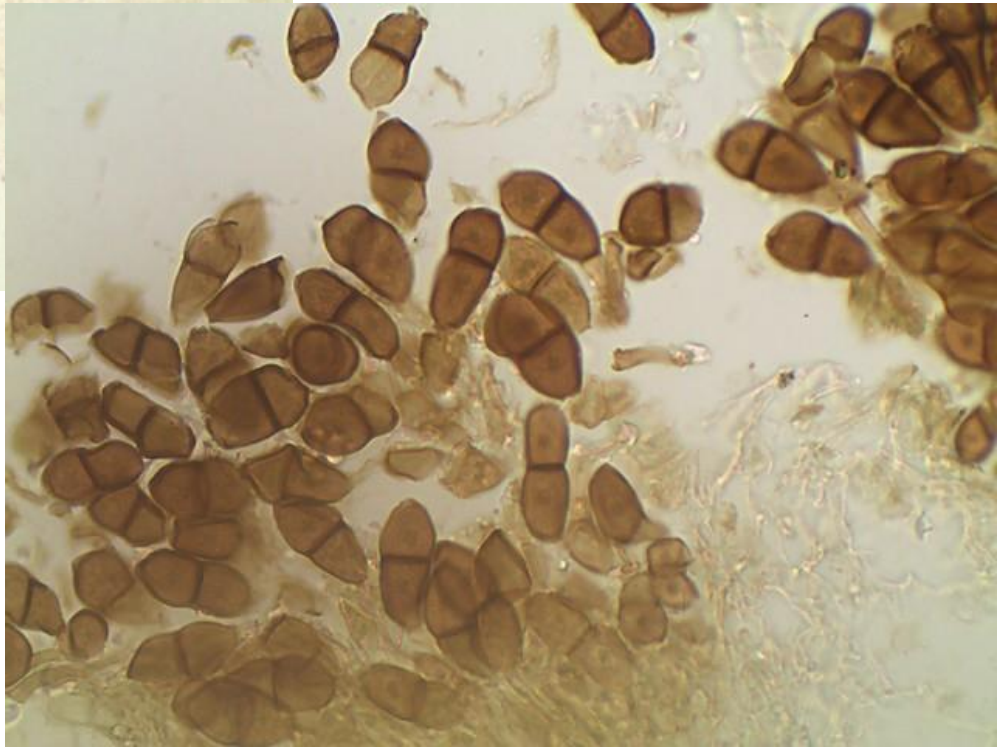
***Penicillium* Conidial Stage**



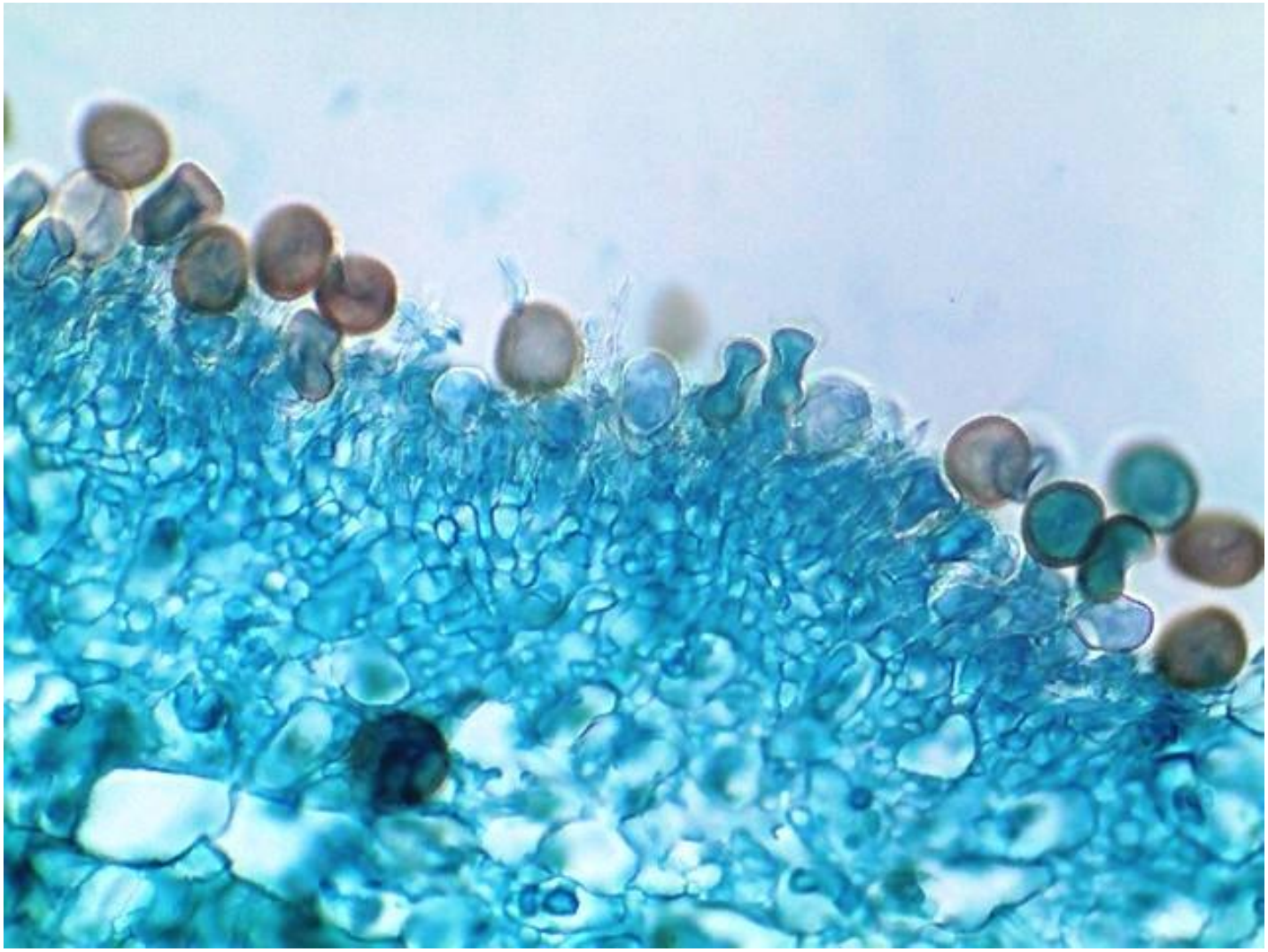


Puccinia Aecidial Stage

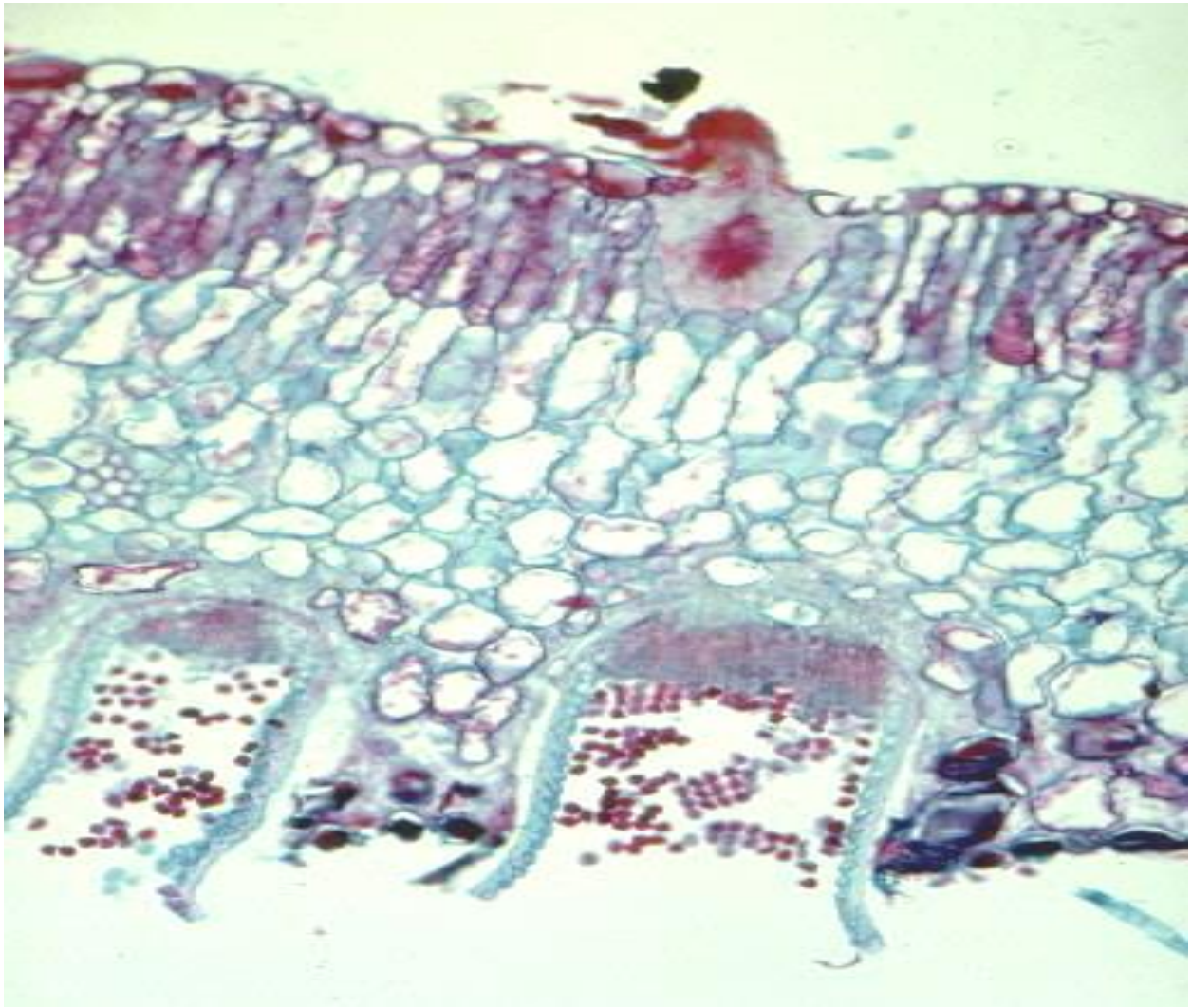




***Puccinia* Teluto Stage**

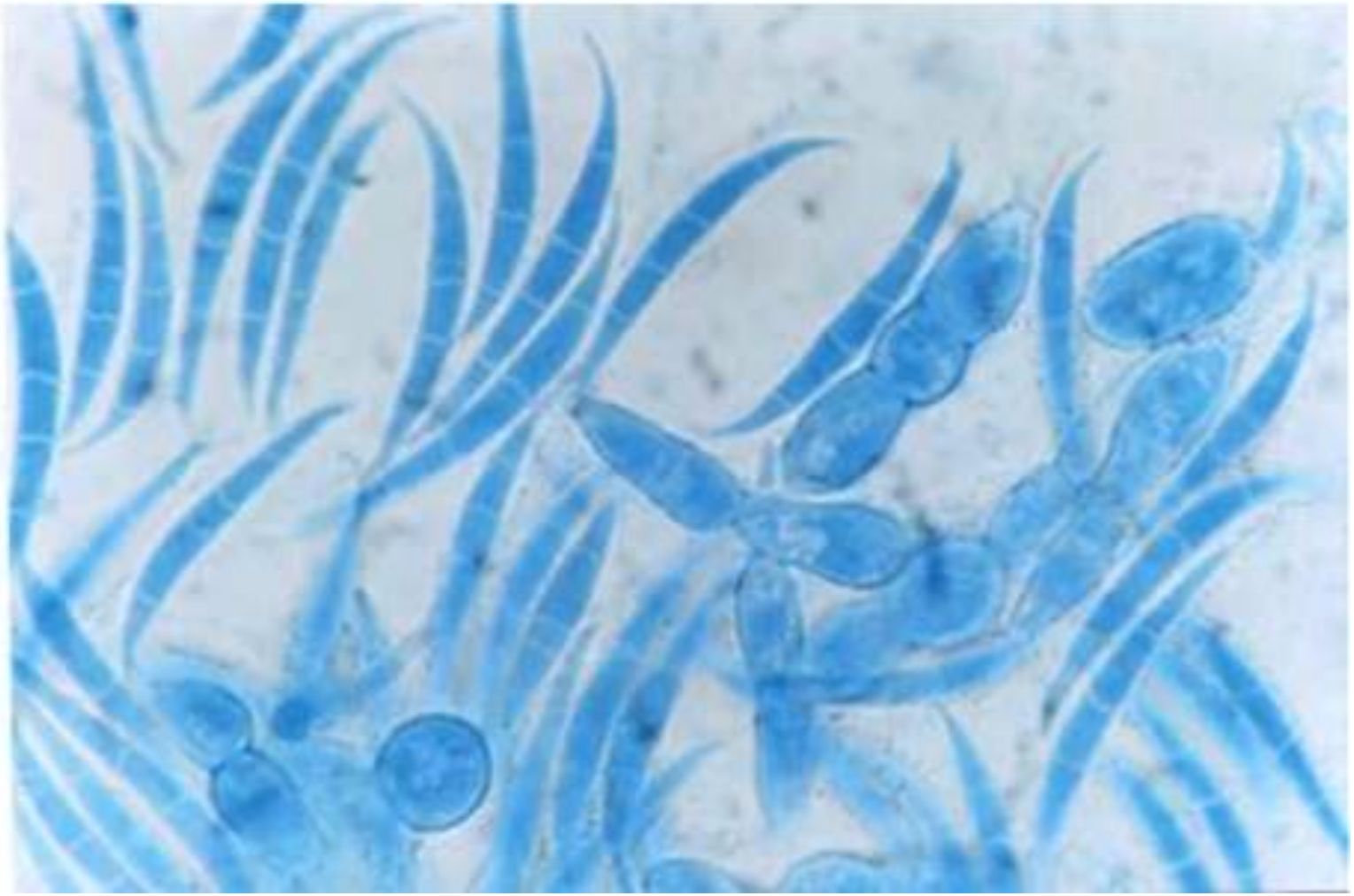


***Puccinia* Uredial Stage**

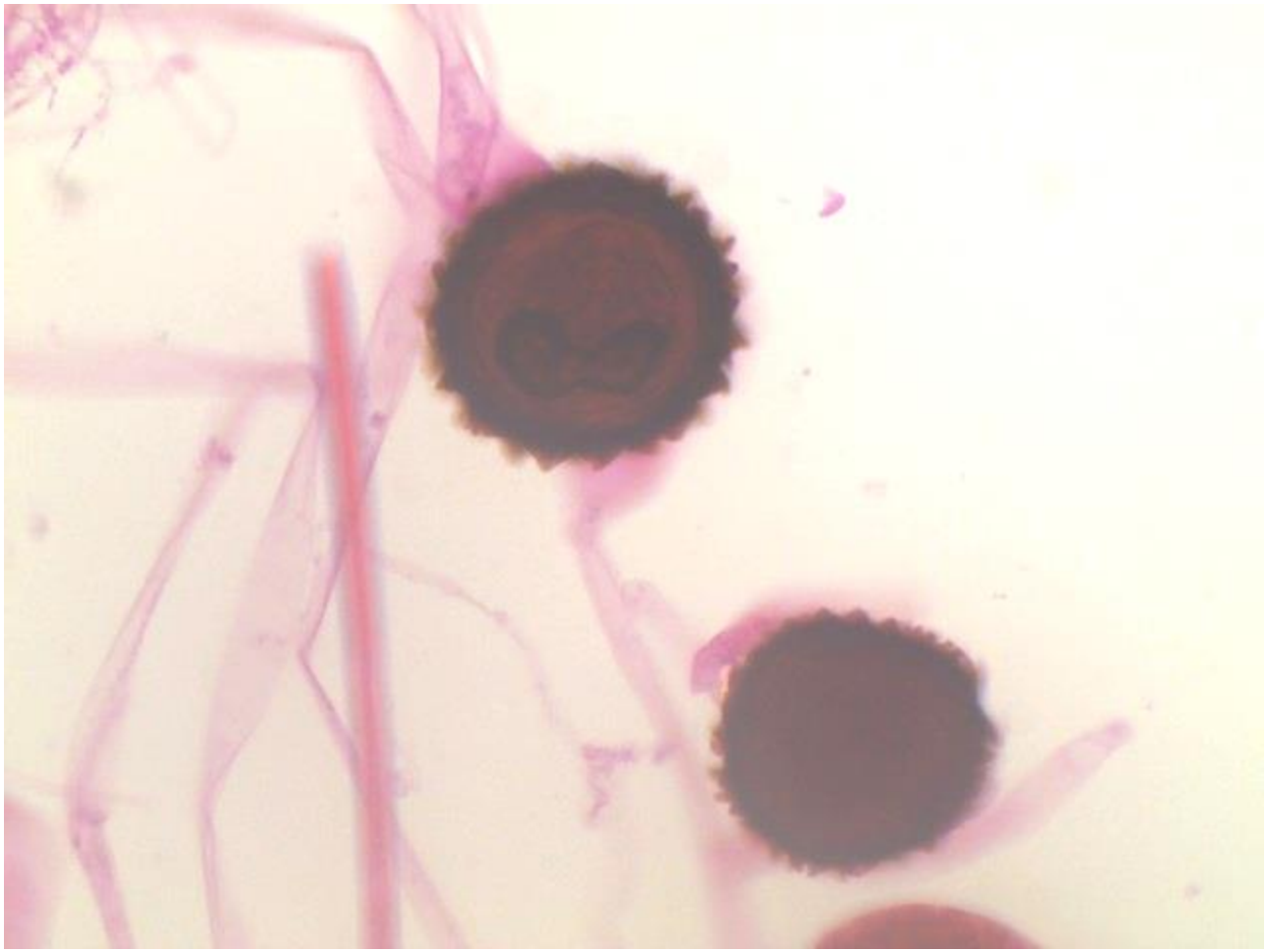


***Puccinia* Pycnidial Stage**

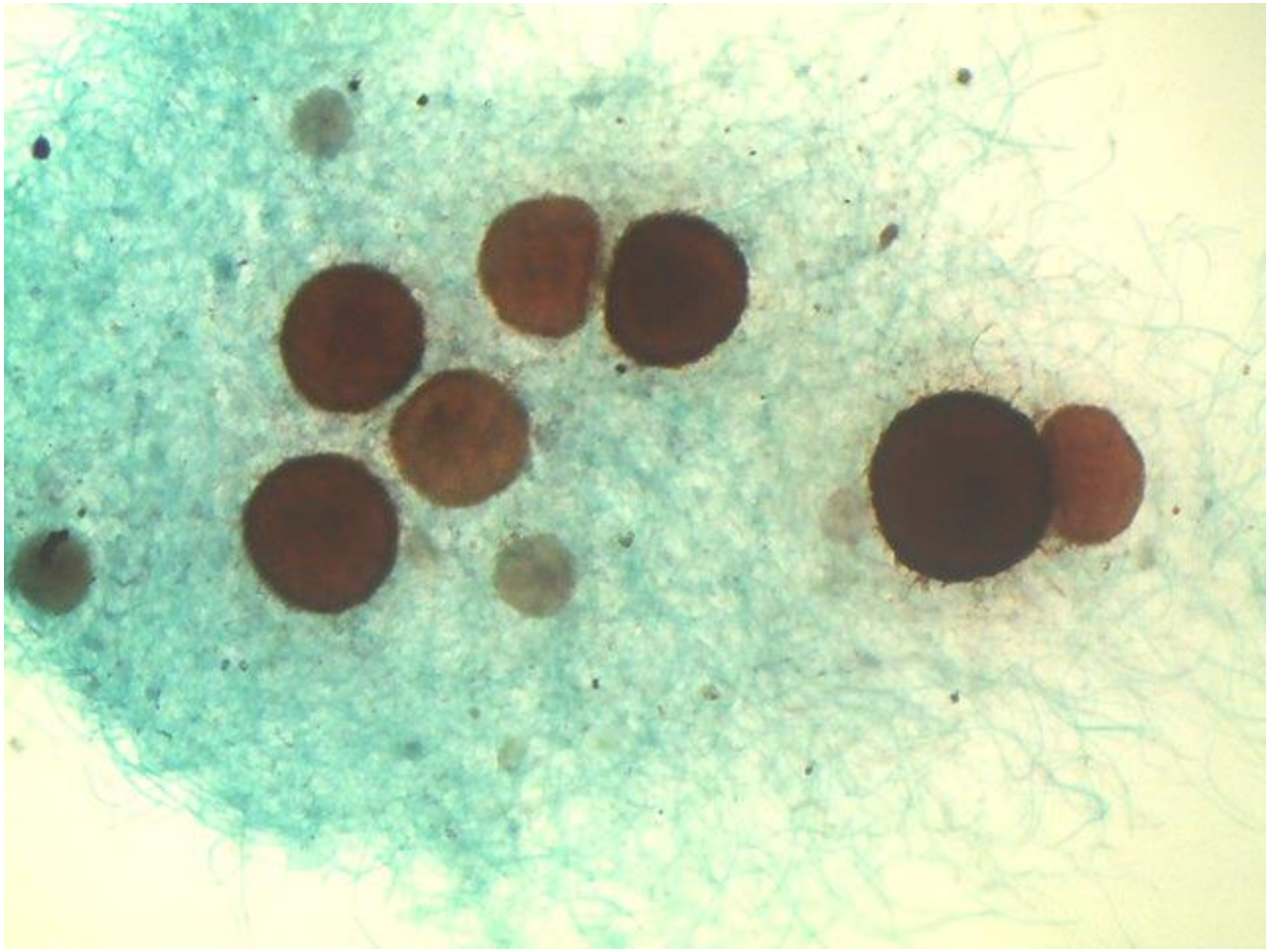
***Alternaria* Conidia**



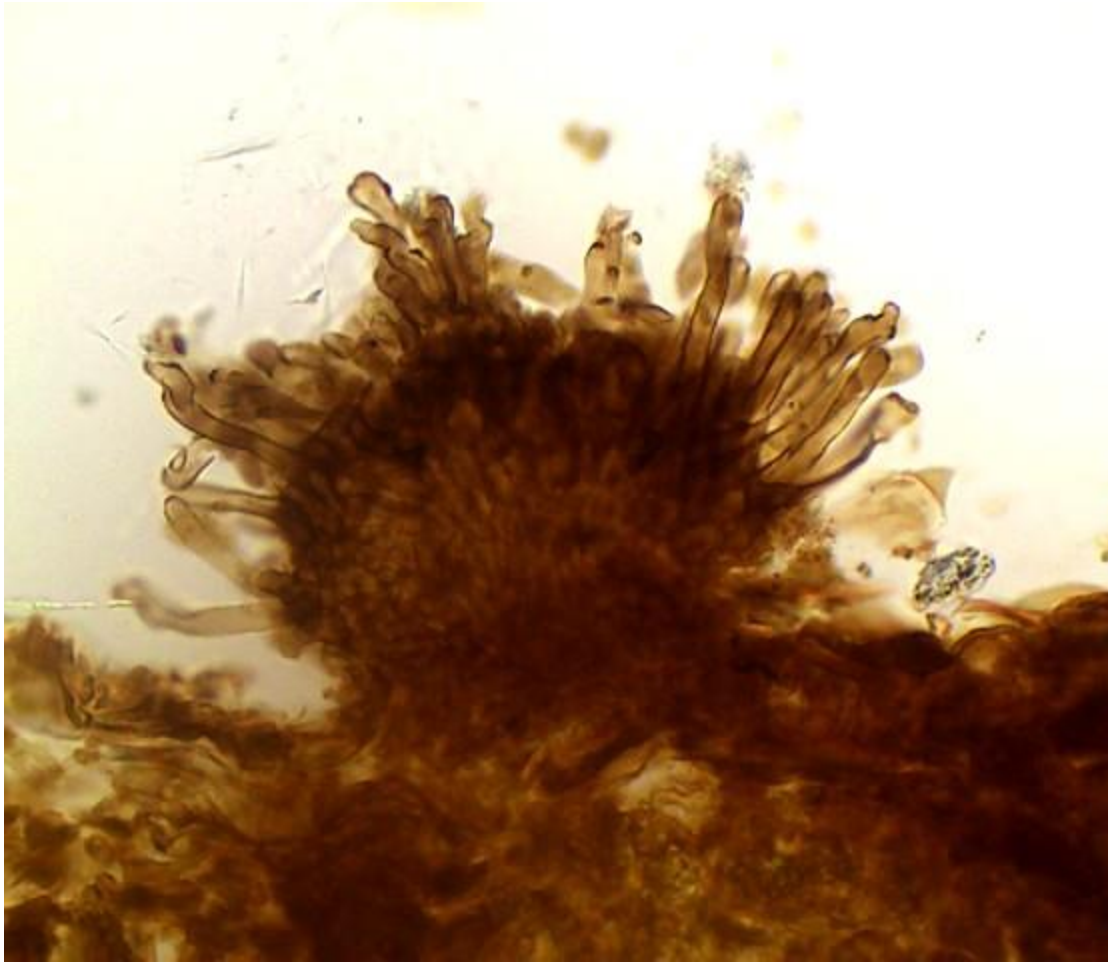
***Fusarium* Conidia**



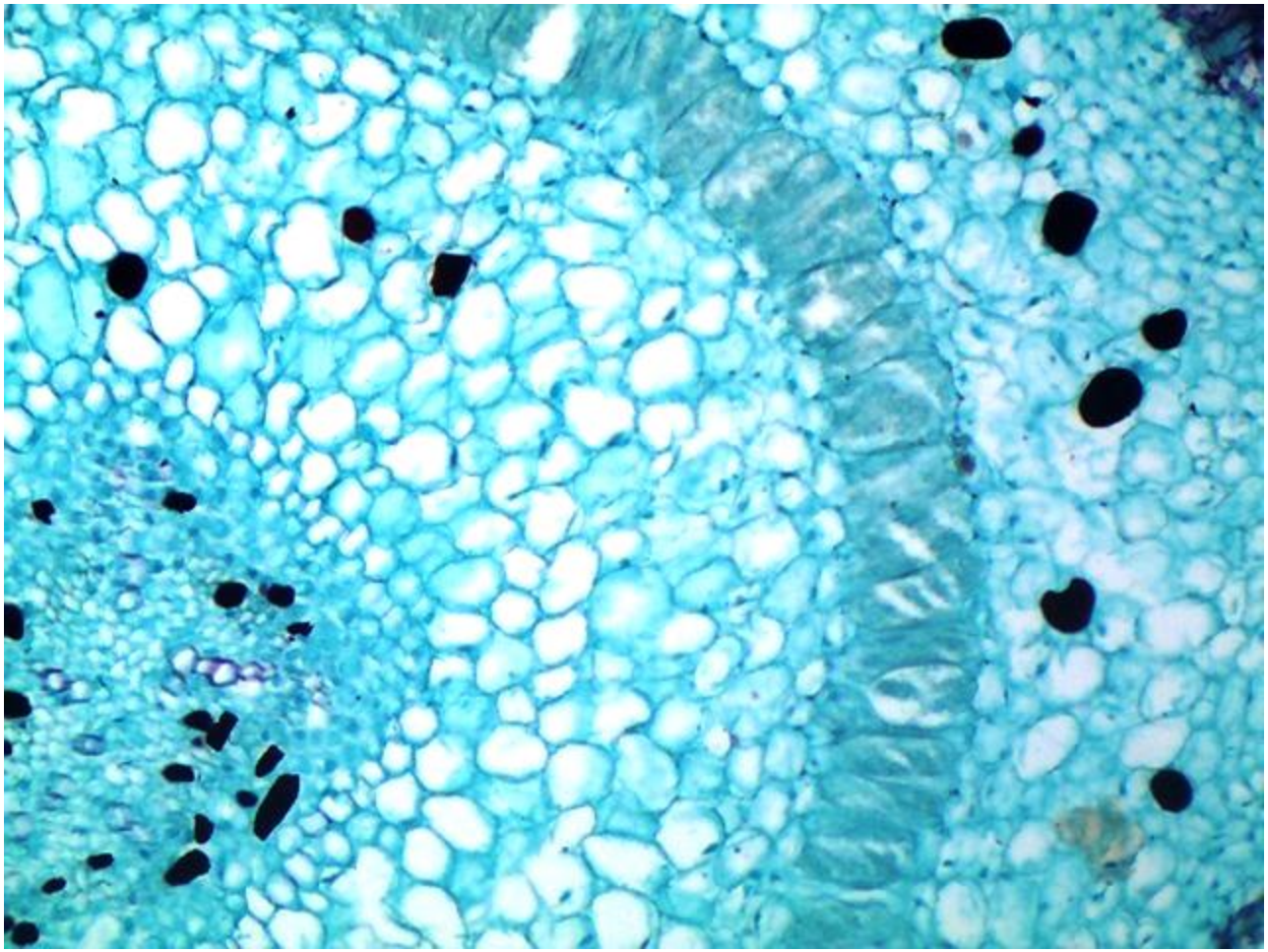
***Rhizopus* Sexual Stage**



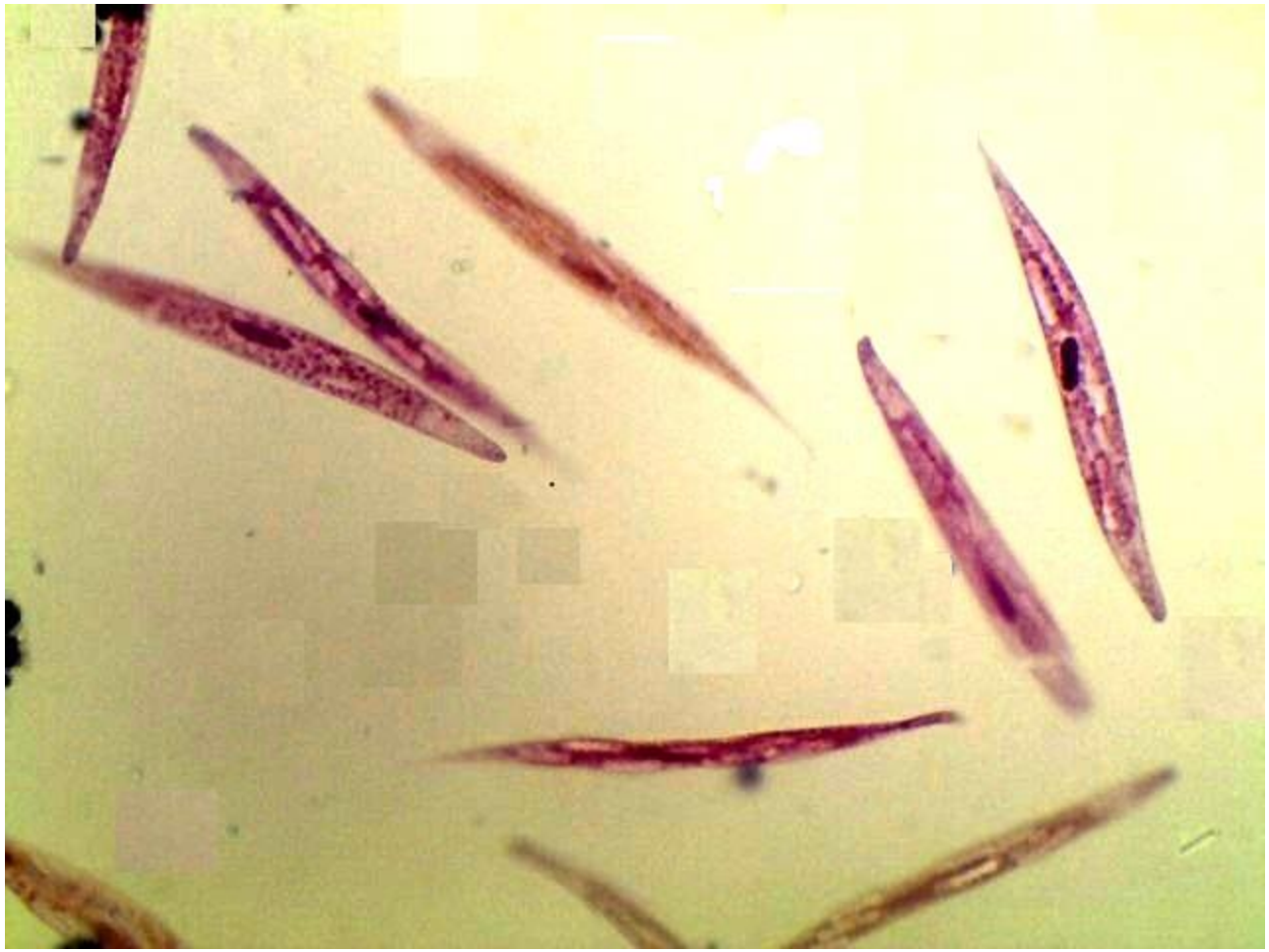
***Erysiphae* Cleistothecia**



Cercospora



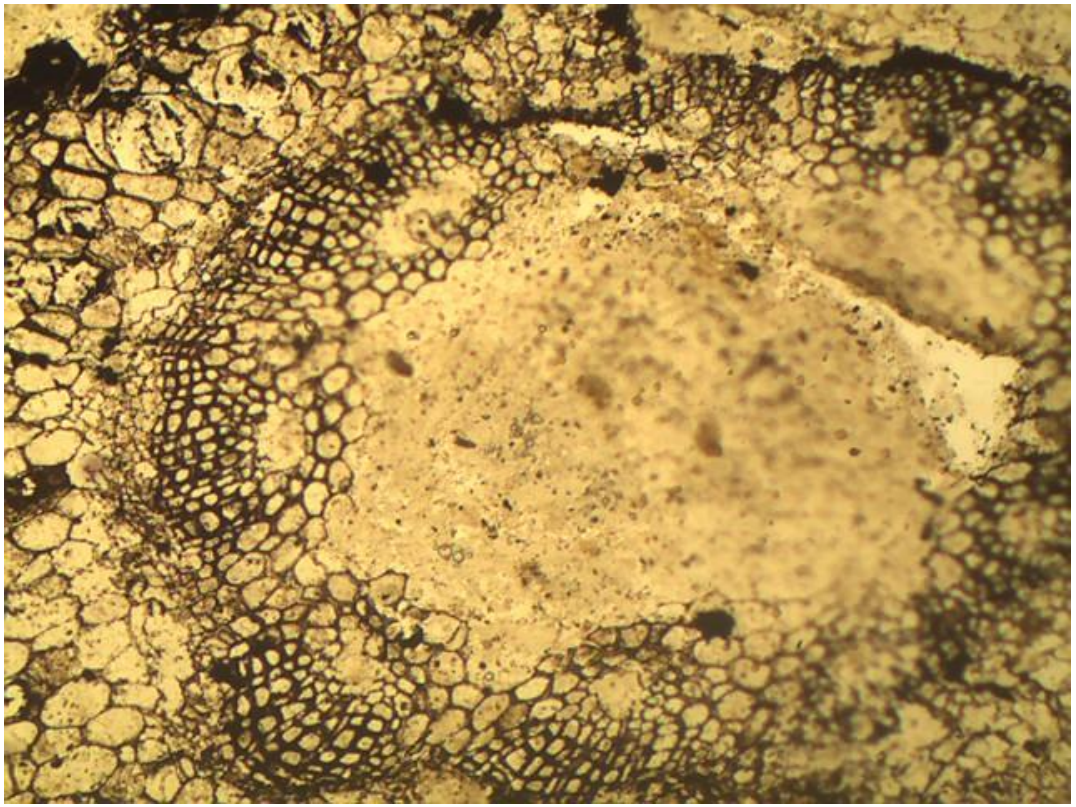
TS Coralloid Root of Cycas



Diatoms

LS of Root Tip

T. S of *Aglaophyton major*



TS of *Equisetites* Stem

TS of *Lepidodendron* Stem

TS of *Horneophyton* Stem

Impression of *Glossopteris* Leaf

Compression of *Glossopteris* Leaf

Compression of *Vertebraria*

Compression of *Equisetites*

Petrified Dicot Wood

Agar Agar

Division : Eumycota
Sub-Division: Ascomycetes
Class: Discomycetes
Order: Pezizales
Family: Helvellaceae
Genus : ***Morchella***

- The ascocarp or fruiting body is an **apothecium**. The size of ascocarp ranges from 2.5 cm to 12 cm.
- The colour varies from grayish white to dark brown.
- The ascocarp was differentiated into thick stalk called **stipe** and an apical cap like head called **pileus**.
- The stalk or stipe is fleshy and hollow in centre.
- The fertile portion of pileus is conical in shape and hollow in centre and looks like cap.
- The outer surface of pileus show ridge and depression which give pitted appearance.
- The ridges are sterile. The depressions or pits are fertile area constituting the hymenium. They are irregular in shape and brown in colour.

Morchella

Division : Eumycota
Sub-Division: Basidiomycotina
Class: Hymenomycetes
Order: Agaricales
Family: Agaricaceae
Genus : ***Agaricus***

- The basidiocarp is the fruiting body which develops in rainy season.
- The young basidiocarp is small, oval or pear shaped structure which arise on rhizomorphic potion and called Button stage.
- The mature basidiocarp is an umbrella shaped structure, differentiated into upper expanded, circular head called **pileus** and lower short, fleshy stalk called **stipe.**

Agaricus

Chilgoza

Wheat Grains

Groundnut

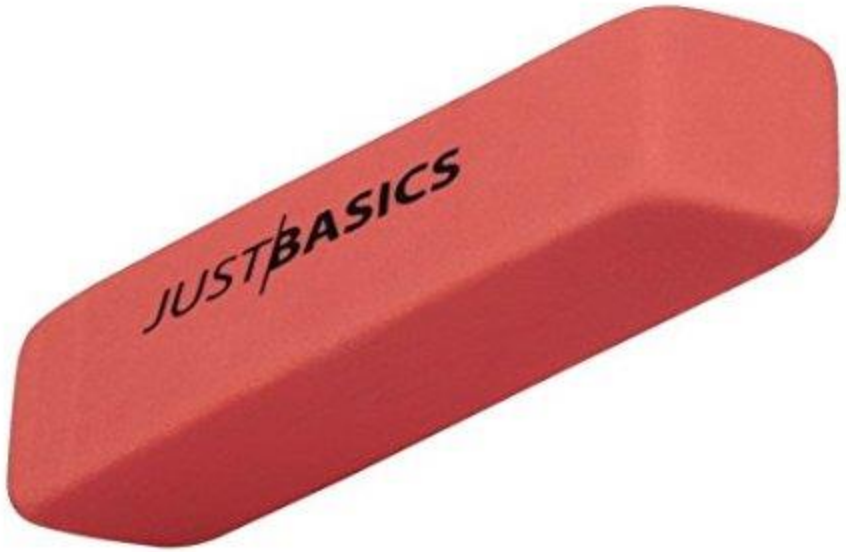
Coriander

Cloves

Betel Nut

Coconut

Tobacco



Rubber

Cigarette

Biri

Cotton Fruit

Paan with all Ingredients

Poppy Fruit

Tea

Coffee

Turmeric

Aloe vera

Churmura

- The plant are free floating water weeds, occur abundantly in ponds, lake and ditches.
- Plants grow by means of spongy offsets, which show nodes and internodes.
- Cluster of pinkish adventitious roots arise from each node.
- The roots acts as balancers.

Eichhornia

- The plant is free floating hydrophyte found in ponds.
- The plants grow by means of offset (stem which has node and internode.
- A rosette of sessile leaves arise in close spirals at each node.
- Older leaves are spread horizontally.
- A cluster of adventitous roots arise from each node.
- The roots are devoid of root caps instead they bear root pockets

Pistia

- The plant are small free floating hydrophyte found in ponds and lakes.
- The plant body show no distinction of stem and leaves .
- It looks like thallus.
- Each plant bear a single, unbranched, hairless peltately attached root.
- It possess a smooth or winged root pocket.

Lemna

- It is the common submerged hydrophyte that grow suspended under water.
- Plant are perennial.
- The branched shoot is attached to the substratum by adventitous roots
- The stem is delicate, thin, spongy and flexible.
- It has nodes and internodes.
- Plants parts are covered with mucilage.

Hydrilla

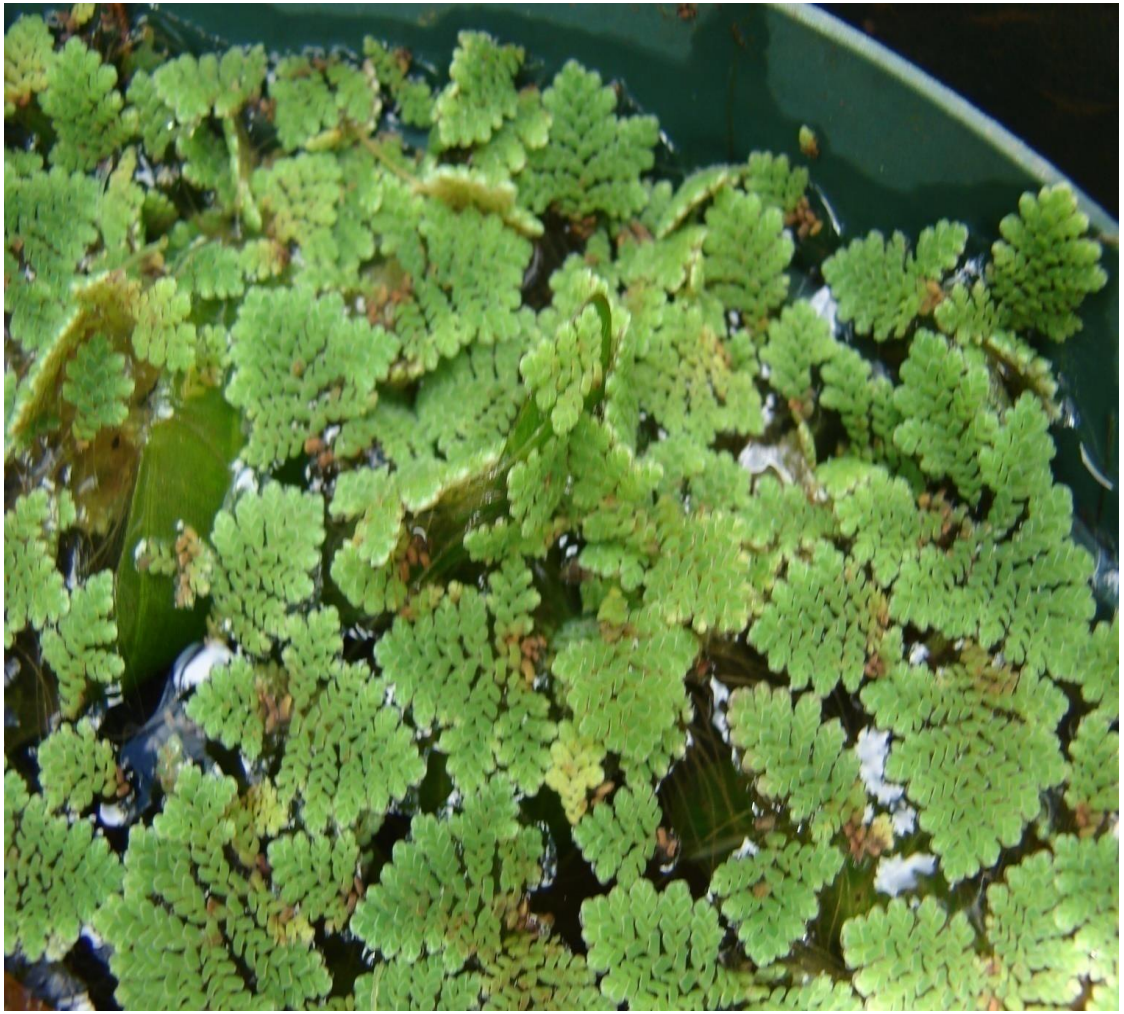
- The plant are small free floating hydrophyte belonging to pteridophyte.
- The upper surface of leaves is well protected from wetting by interlacing hairs.
- The plants grow in dense masses which cause partial shades.

Salvinia

- The plant are free floating hydrophytes.
- The stem is spongy and grow over the surface of water.
- It produce aerial leafy shoots from the nodes.
- Two kind of roots develops from the nodes- ordinary anchorage roots and modified floating root.
- Root hairs are absent.
- The root caps are elongated and form root pockets.

Jussiaea

- *Azolla* (Mosquito fern, duckweed fern, fairy moss, water fern) is genera of family Salviniaceae.
- They are extremely reduced in form and specialized, looking nothing like conventional fern.
- *Azolla* floats on surface of water by means of numerous, small, closely overlapped scale like leaves.
- They form symbiotic relationship with cyanobacterium *Anabaena azollae*.



Azolla

Ulva

Fucus

Sargassum

Gracilaria

Padina

Halimeda

Dictyota

Caulerpa

Laminaria

Parthenium

Croton bonplandianum

Argemone maxicana

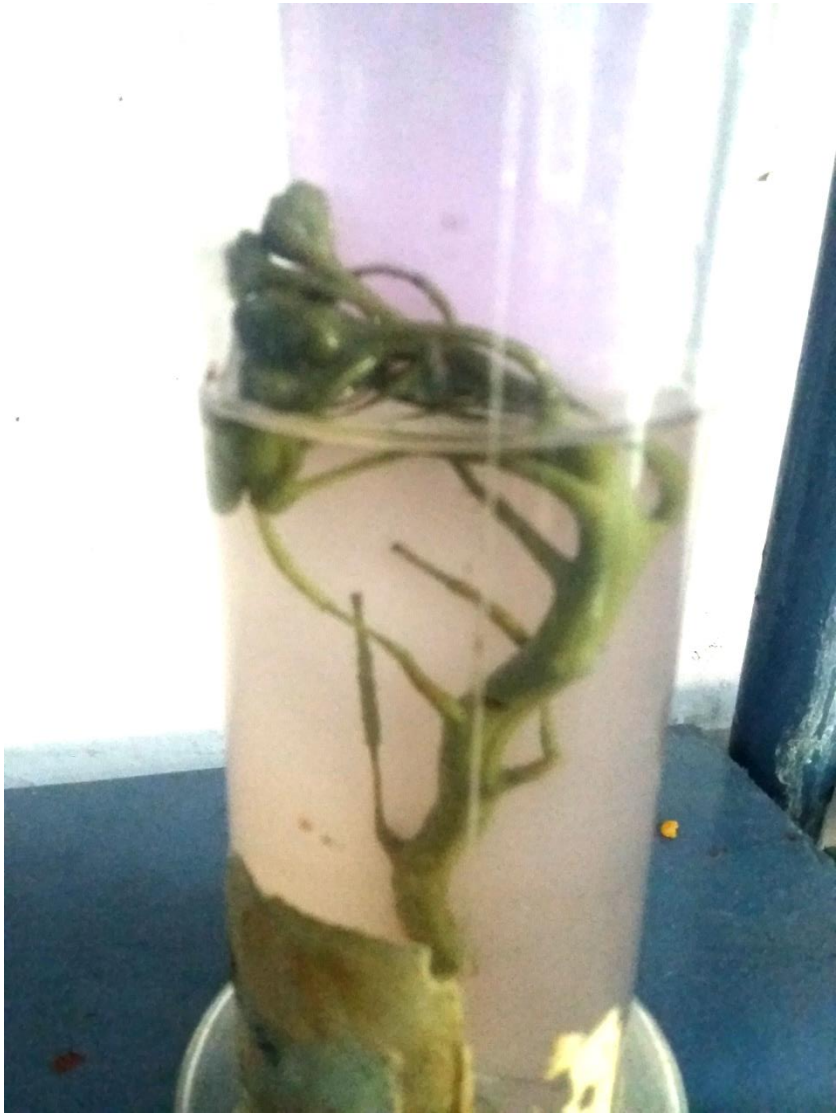
Lantana indica

Adhatoda vesica

Euphorbia hirta

Solanum nigrum

Ageratum conyzoides



Hypertrophy of *Brassica*

Covered Smut of Barley

Loose Smut of Wheat

Tikka Disease of Groundnut

Citrus Canker

Lawsonia