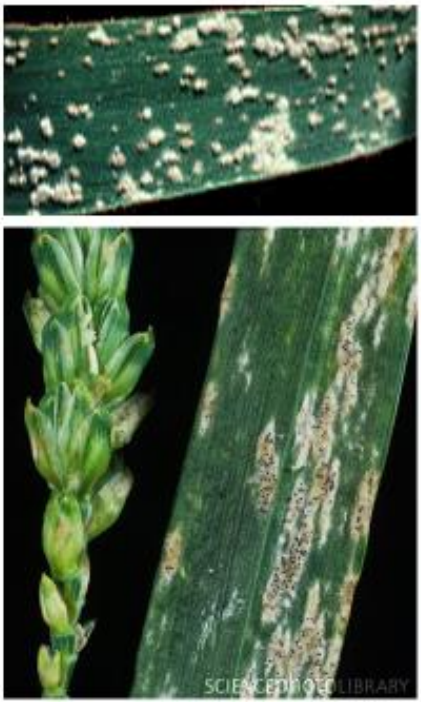
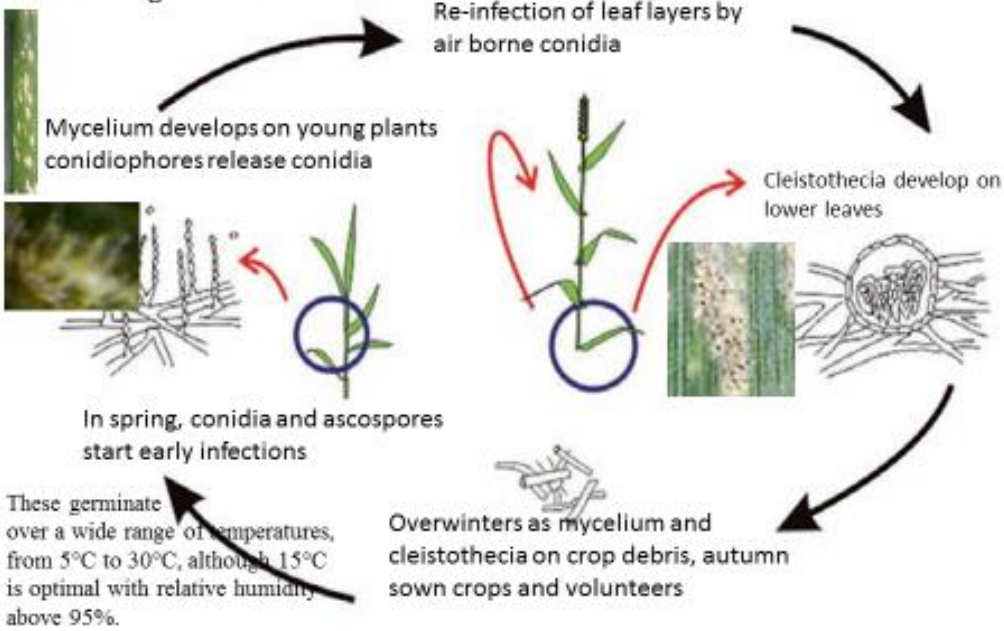
Powdery Mildew (*Erysiphe graminis* f.sp. *tritici)*
Host: Wheat
Erysiphe graminis* f.sp. *hordei
Host: Barley

Symptoms:

- White or gray- brown powdery or cottony patches of mycelium on the upper surface of lower leaves.
- Tiny, brown - black spots (cleistothecia) are visible.
- Yellowing is usually visible on the undersides of leaves opposite the powdery patches.



Powdery Mildew
Blumeria graminis



Conditions:

Disease development is favored by

- susceptible cultivars
- heavy nitrogen fertilization
- high plant populations
- deep sowing
- high humidity
- 18 – 22 °C

Inoculum Survival: Infected crop residues.

- mycelium
- cleistothecia

Inoculum Dispersal: Airborne spores.

Importance:

- In susceptible varieties, yield losses can be high (up to 20%) and early control can be very important.

Management:

1- crop rotations.
2- resistant cultivars.
3- destruction of residues.
4- proper fertilization.
5- foliar fungicides.

Disease Name:
Fusarium Seedling Blight
Fusarium Crown Rot
Fusarium Head Blight (FHB)
Pathogen: Fungus *Fusarium* (*F. culmorum, F. graminearum, F. avenaceum* and *F./microdochium/ nivale).*

Symptoms:

1-Seedlings are killed before emergence.
2-Seedlings that do emerge are stunted and yellow, with the crown, roots or lower stem having a brown to red-brown rot.
3- Brown or reddish streaks may occur on the stem.
4- Lesions are variable in shape and size.

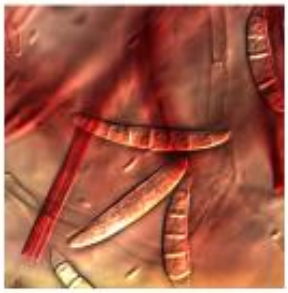
Seedling blight (filter p.)

5- The disease may occur on older plants as well, causing a reduction in the number or size of tillers that mature prematurely with white and shriveled heads.
6- Plant vigour is reduced in infected plants.

Fusarium head blight

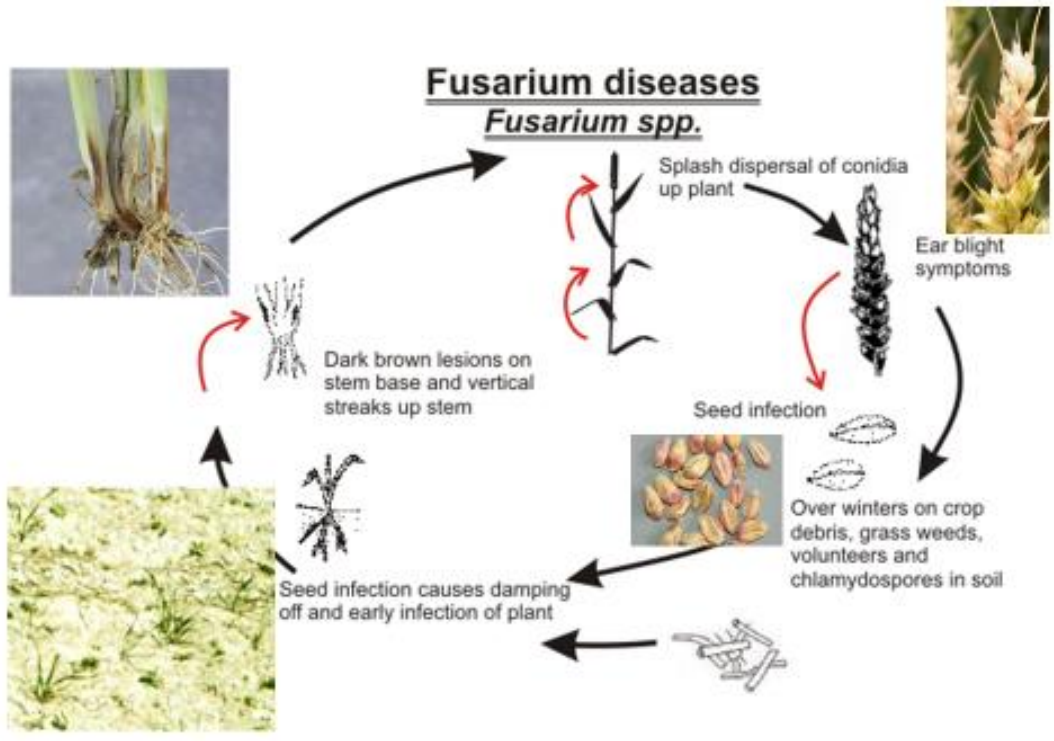
Healthy Diseased

Diseased



pink or orange spore mass (sporodochia) on Petri dish & wheat spike Conidia of F. culmorum

F.Graminearum *F. avenaceum* F. (*Microdochium*) *nivale.*



Survival:

Seed & soilborne spores

- Infected seeds are the most important source of inoculum (a serious threat to crop establishment).
- Most Fusarium species have good saprophytic abilities which allow them to colonize and survive on debris in soil.
- Many grasses also act as a source of inoculum.

Importance:

- Worldwide spread.
- Yeald loose up to 70%.
- Infection not only decrease the amount and quality of the yield but also can result in high levels of mycotoxins .

Control:

- Crop rotations.
- Use foliar fungicides.
- Seed treatment.
- Residue management
- Resistant Varieties ! (less susceptible).

Disease: Spot blotch (Foot Rot)

Pathogen: *Bipolaris sorokiniana* (Sacc.) Shoem.

(syn. *Helminthosporium sativum*),

teleomorph *Cochliobolous sativus*

Hosts: wheat & barley

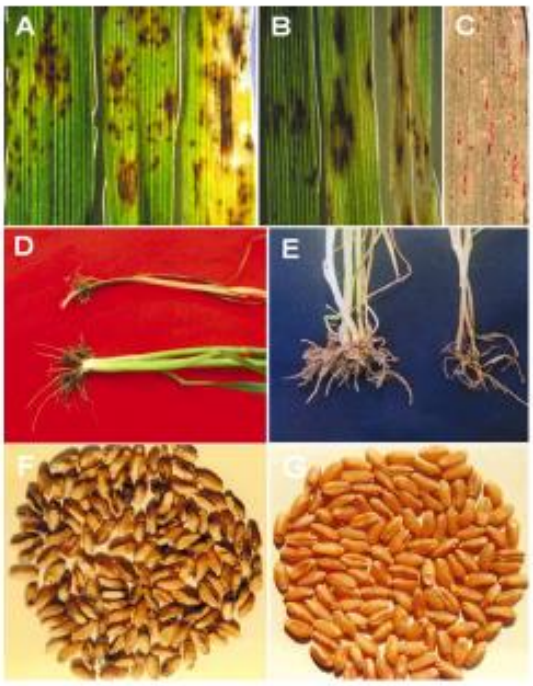
Symptoms:

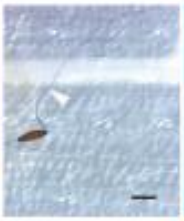
. Seedborne infection can result in seedling death.

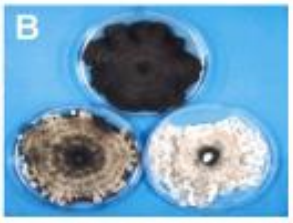
. Infected plants usually grow to maturity.

. severely affected, can show stem base rotting and poorly filled ears.

The pathogen causes spot blotch on primary leaves of barley (A) wheat (B) and flag leaves of wheat (C). Common root rot (D) Crown rot (E) and black point (F) (compare with healthy grains in G).



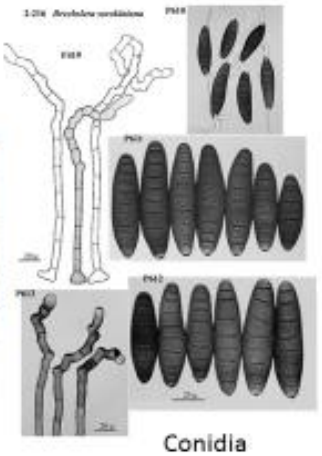




Conidia

Fungus growth on Petri dishes

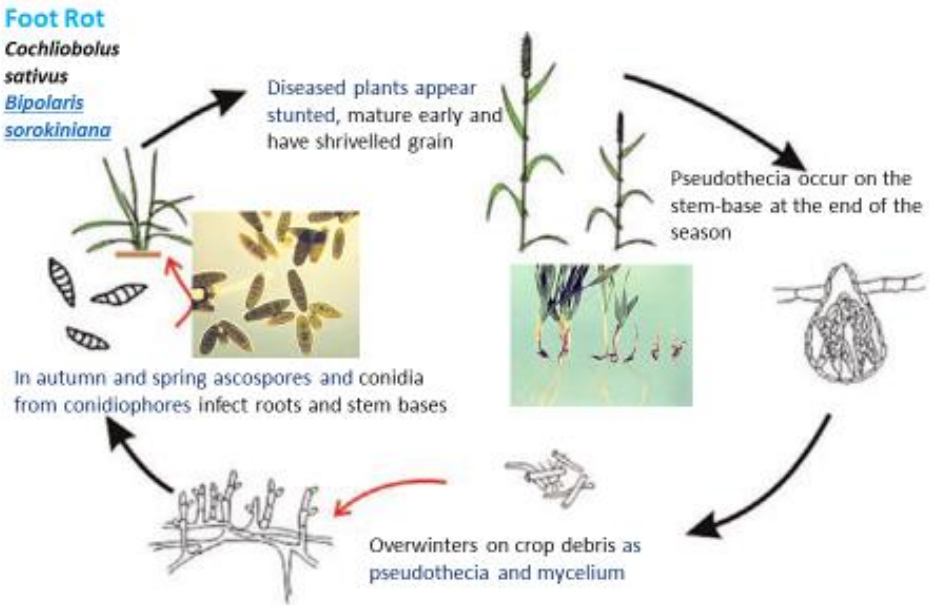
Foot rot discoloration of wheat



Foot rot browning at the base of young barley plants

Conidia on stem

Conidia



Environmental conditions:

The pathogen has a worldwide distribution, but is particularly important and aggressive under conditions of high relative humidity and temperature associated with imbalanced soil fertility

Importance:

The fungus is one of the most serious foliar disease for both crops (wheat and barley) in warmer growing areas.

Causes significant yield losses, up to 70%.

Inoculum:

The fungus is both soil and seedborne.

Control:

1- cultural practice
2- crop rotation
3- seed treatment
4- foliar fungicide
5- disease resistant varieties

T.A.