

## Study on blast disease of rice

### Symptoms:

- i) The fungus can be attacked more rapidly in nursery and flowering stage and also infected leaves, blade and neck
- ii) Symptoms on leaves first appear as small whitish or grey specks which enlarge quickly at favourable condition
- iii) Fully developed leaf lesions are usually eye/spindle/diamond shaped with a grey or white center and brown or reddish brown border
- iv) At heading stage the fungus also attacks the panicle neck, node which is girdled, shriveled and becomes black
- v) Infection at the junction of the leaf blade and leaf sheath results in the typical brown "collar rot" symptom
- vi) The infected panicle usually at the neck node often break and hang down, such symptoms called "neck rot" or "rotten neck blast" that can be very injurious to the crop.

### Causal Organism:

*Pyricularia oryzae* (Imperfect stage)

*Magnaporthe oryzae* (Perfect stage)

### Pathogenic characters:

**Mycelium:** The mycelium is well developed, branched, septate, inter or intracellular hyphae.

**Conidiophore:** The conidiophores are single, long, slender, septate or aseptate and usually unbranched.

**Conidia:** conidia are pale brown, **obpyriform** and multicellular (usually 3 cell). Each conidium remains attached with the conidiophore by a papilla like hilum.

### Taxonomic position:

Kingdom: Fungi

Division: Deuteromycota

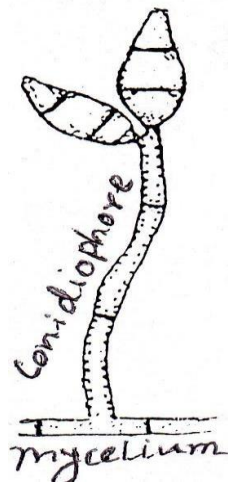
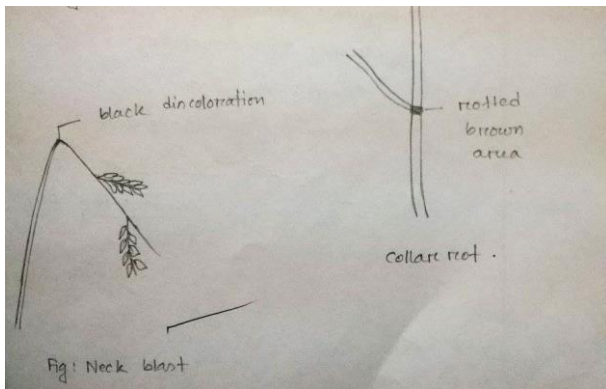
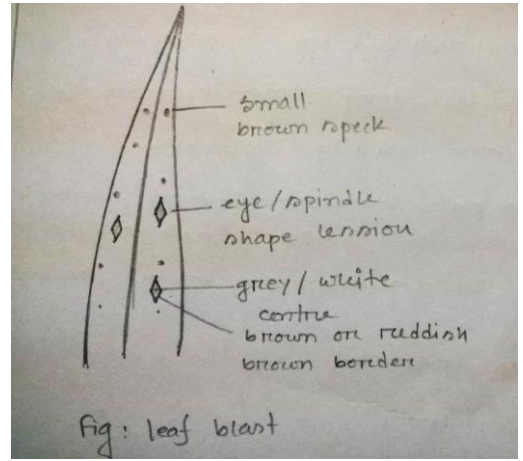
Class: Hyphomycetes

Order: Moniliales

Family: Dematiaceae

Genus: *Pyricularia*

Species: *P. oryzae*



Different structure of *Pyricularia oryzae*

## Study on bakanae disease of rice

### Symptoms:

- i) The fungus secretes hormone at the base of the stem and stimulates adventitious root formation and internode elongation
- ii) The diseased plants are much taller, slender compared to healthy plants and detected easily by their tall pale green leaves
- iii) Infected seedlings maybe stunted and chlorotic, exhibiting root and crown rot. Usually infected seedlings are killed
- iv) Older leaves can also be infected and may exhibit abnormal elongation and produce adventitious root from the first, second and third nodes above the ground level
- v) The severe affected plant become slender and weak and ultimately die

### Causal Organism:

*Fusarium moniliforme* (Imperfect stage)

*Gibberella fujikuroi* (Perfect stage)

### Pathogenic characters:

**Mycelium:** Well developed, branched, septate often colorless hyphae which turn brown at maturity

**Phialid:** The cell on which the macro conidia developed are called phialid

**Sporodichium:** A compact, cushion-like aggregation of hyphae on which conidiophores are formed in a dense layer

**Conidia:** It has two types of conidia

- i) **Macroconidia:** macroconidia are long, septate (usually 3-5 cells), crescent shape/sickle shape structures hence called falcate type of conidia produced on sporodochia and hyaline
- ii) **Microconidia** are small, usually unicellular but sometimes bicelled, spherical to oval shaped and hyaline.

### Taxonomic position:

Kingdom: Fungi

Division: Deuteromycota

Class: Hyphomycetes

Order: Moniliales

Family: Tuberculariaceae

Genus: *Fusarium*

Species: *F. moniliforme*



Healthy plant and infected rice plant (tall pale, green slender leaf, elongated internode, adventitious roots at 1st, 2nd and 3rd internode and foot rot symptom appeared)

