

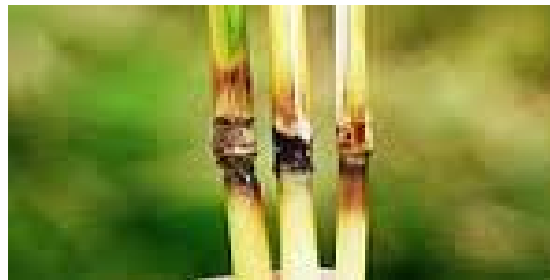
Important diseases of rice

- Blast
- Bacterial Leaf Blight
- Brown spot
- Sheath Blight
- False smut

Blast (*Magnaporthe oryzae*)



Leaf blast



Nodal blast



Neck blast



Spores of *Magnaporthe oryzae*

- **Survival:**

- Collateral hosts (sugarcane, *Digitaria*, *Dinerba*, *Panicum*, *Brachiara*, *Leersia*, *Ehcinochloa*, etc.)
- In rice plants (in continuous rice cultivated areas)
- In left over diseased seedlings (in nursery beds)

- **IPM Practices:**

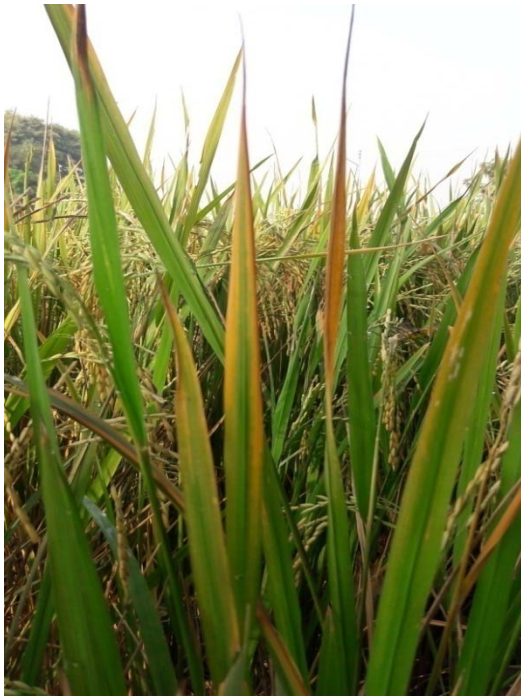
- **Cultural practices:** Field sanitation, destruction of weed/collateral hosts, avoid excessive N (50% through FYM, 50% through urea)
- **Application of fungicides:** seed treatment with copper sulphate, copper oxychloride. Copper oxychloride, Blitox 50 WP, Hinosan 50 EC @ 1.5 mL/L, Carpropamid 1mL/L, Contaf 5 EC 2 mL/L
- **Use of resistant cultivars:** Use resistant varieties
- **Biological Control:** Seed treatment with *Pseudomonas fluorescens*, *Pseudomonas putida*

Brown spot (*Bipolaris oryzae*)



- **Survival:** Soil (diseased crop debris) and seed borne
- **IPM Practices:**
 - **Cultural practices:** Field sanitation (destruction of stubbles), removal of collateral hosts (*Setaria*, *Leersia*, *Echinochloa*, etc.), hot water seed treatment (55°C) for 10 min., apply calcium silicate in silica deficient soil
 - **Application of fungicides:** Seed treatment with Captan/Thiram @ 4.0g /kg. Seed treatment with tricyclazole followed by spraying of Mancozeb 75% WP + Tricyclazole 75% WP at tillering and late booting stages.
 - **Use of resistant cultivars:** Use resistant varieties
 - **Biological Control:** *Pseudomonas fluorescens* @ 10g/kg of seed followed by seedling dip, foliar spray of conidial suspension of *Trichoderma viride*, foliar spray of neem cake extract

Bacterial leaf blight (*Xanthomonas oryzae* pv. *oryzae*)



- **Survival:** Seed, weed hosts, volunteer rice, infected rice stubbles
- **IPM Practices:**
 - **Cultural practices:** Split application of N, maintaining shallow water in nurseries, providing good drainage during severe flooding, clean cultivation and drying the fallow fields, Remove collateral weed hosts
 - **Chemical treatments:** Seed treatment with 0.1 g Streptocycline + 0.1 g Copper Sulfate, 0.3 g Agrimycin-100 + 0.1 g Copper Oxychloride in one liter of water for 20 minutes, Foliar spray of 0.05 g Streptocycline + 0.05 g Copper Sulfate
 - **Use of resistant cultivars:** Use resistant varieties
 - **Biological Control:** Not very useful

Sheath blight (*Rhizoctonia solani*)



- **Survival:** Sclerotial bodies left in the field from previous crop and weeds, Mycelium in the plant debris
- **IPM Practices:**
 - **Cultural practices:** Reduce seed rate (wider spacing), Avoid using infected seed. Apply moderate 'N' levels (80-100 kg/ha) in 3-4 splits. Avoid excess 'N', skip final 'N' in sheath blight infected fields. Destroy stubbles / weeds, *etc.* Check brown plant hopper population
 - **Chemical treatments:** Seed treatment with carbendazim 2.0g/kg of seeds. Spraying fungicides of 1g carbendazim 50WP (540g/acre) or 2.0g mancozeb 75WP or 1ml hexaconazole in 1 liter of water. Propiconazole 0.2-0.48 kg a.i./ha
 - **Use of moderately resistant cultivars:** Use moderately resistant varieties as there is no commercial highly resistant varieties available
 - **Biological Control:** Seed treatment with *Pseudomonas fluorescens*, *Trichoderma viride*, *Bacillus subtilis*

False smut of rice (*Ustilaginoidea virens*)



- **Survival:** Soil, seed and air borne fungal disease
- **IPM Practices:**
 - **Cultural methods:**
 - Keep the field clean.
 - Remove infected seeds, panicles, and plant debris after harvest.
 - Use moderate rates of Nitrogen.
 - Use certified seeds.
 - Treat seeds at 52°C for 10 min.
 - **Use of resistant cultivars:** Resistant varieties should be used.
 - **Chemical treatments:**
 - Preventive: Spraying copper oxychloride at 2.5 g/L or Propiconazole at 1.0 ml/L at boot leaf and milky stages.
 - Seed treatment: Carbendazim 2.0g/kg of seeds.
 - Therapeutic: Spraying of carbendazim and copper base fungicide at tillering and preflowering stages.