



## Diseases of Rice

### Rice

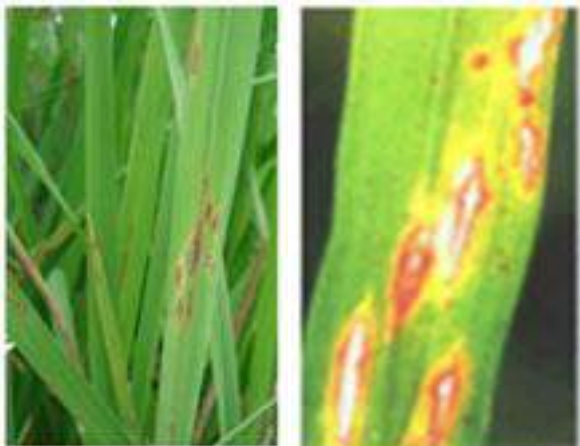
S.no	Name of Pest	Scientific Name
1.	Blast	<i>Pyricularia oryzae</i>
2.	BROWN SPOT	<i>Helminthosporium oryzae</i>
3.	Sheath rot	<i>Sarocladium oryzae</i>
4.	Sheath blight	<i>Rhizoctonia solani</i>
5.	False smut	<i>Sarocladium oryzae</i>
6.	Udbatta disease	<i>Ephelis oryzae</i>
7.	STEM ROT	<i>Sclerotium oryzae</i>
8.	Foot Rot or Bakanae Disease	<i>Fusarium moniliforme</i>
9.	Bacterial Leaf Blight	<i>Xanthomonas oryzae</i> pv. <i>oryzicola</i>
10.	Rice Tungro Disease	vector –Green Leaf Hopper
11.	Rice Grassy stunt disease	<i>Xanthomonas oryzae</i> pv. <i>oryzicola</i>
12.	Rice ragged stunt disease	<i>Rice ragged stunt virus</i>
13.	Rice yellow dwarf disease	<i>Rice yellow dwarf virus</i>

### Fungal Diseases

#### 1. BLAST (*pyricularia oryzae*)

##### Symptoms

- The spots coalesce as the disease progresses and large areas of the leaves dry up and wither.
- Spots also appear on sheath. Severely infected nursery and field appear as burnt.
- Fungus attacks the crop at all stages of crop growth. Symptoms appear on leaves, nodes, rachis, and glumes.
- On the leaves, the lesions appear as small bluish green flecks, which enlarge under moist weather to form the characteristic spindle shaped spots with grey centre and dark brown margin (Leaf blast).



### Favourable Conditions

- Low night temperature (between 15-20°C or less than 26°C).
- Excess dose of nitrogen.

### Management

- Grow resistant to moderately resistant varieties CO47, IR 20, ADT36, ADT39, ASD 18 and IR64. Avoid cultivation of highly susceptible varieties viz., IR50 and TKM6 in disease favourable season.
- Remove and destroy the weed hosts in the field bunds and channels.
- Treat the seeds with captan or Thiram or Carbendazim or Tricylazole at 2 g/kg.

## 2. BROWN SPOT (*Helminthosporium oryzae*)

### Symptoms

- Fungus attacks the crop from seedling to milky stage in main field.
- Symptoms appear as minute spots on the coleoptile, leaf blade, leaf sheath, and glume, being most prominent on the leaf blade and glumes.
- The spots become cylindrical or oval, dark brown with yellow halo later becoming circular. Several spots coalesce and the leaf dries up.
- It causes failure of seed germination, seedling mortality and reduces the grain quality and weight.



### Favorable Conditions

- Temperature of 25-30°C with relative humidity above 80 per cent are highly favourable.
- Excess of nitrogen aggravates the disease severity.

### Management

- Field sanitation-removal of **collateral hosts** and infected debris from the field.
- Use of slow-release nitrogenous fertilizers is advisable.
- Grow tolerant varieties viz., Co44 and Bhavani.

### 3. Sheath rot - *Sarocladium oryzae* (Syn: *Acrocyldrium oryzae*)



### Symptoms

- The flag leaf sheath show oblong or irregular greyish brown spots.
- They enlarge and develop grey centre and brown margins covering major portions of the leaf sheath.

### Favourable Conditions

- High doses of nitrogen
- High humidity and temperature around 25-30°C

### Management

- Spray **Carbendazim** 500g or **Edifenphos** 1L or **Mancozeb** 2 kg/ha at boot leaf stage and 15 days later.
- Soil application of **gypsum** (500 kg/ha) in two splits.

#### 4. Sheath blight - *Rhizoctonia solani* (Sexual stage: *Thanetophorus cucumeris*)



##### Symptoms

- Initial symptoms are noticed on leaf sheaths near water level. On the leaf sheath oval or elliptical or irregular greenish grey spots are formed.
- As the spots enlarge, the centre becomes greyish white with an irregular blackish brown or purple brown border.

##### Favourable Conditions

- High relative humidity (96-97 per cent), high temperature (30-32°C).
- Heavy doses of nitrogenous fertilizers.

##### Management

- Grow resistant varieties like Mansarovar, Swarau Dhan, Pankaj etc.
- Apply organic amendments viz., neem cake @ 150Kg/ha or FYM 12.5 tons/ha. Avoid flow of irrigation water from infected fields to healthy fields.
- Spray Carbendazim 500 g/ha

#### 5. False smut - *Ustilaginoidea virens* (Syn: *Claviceps oryzae - sativa*)







### Symptoms

- The fungus transforms individual ovaries / grains into greenish spore balls of velvety appearance.
- Only a few spikelets in a panicle are affected.

### Favourable conditions

- Rainfall and cloudy weather during flowering and maturity

## 6. Udbatta disease - *Ephelis oryzae*

### Symptoms

- Symptoms appear at the time of panicle emergence. The entire ear head is converted into a straight compact cylindrical black spike like structure since the infected panicle is matted together by the fungal mycelium. The spikelets are cemented to the central rachis and the size is remarkably reduced. The entire spike is covered by greyish stroma with convex pycnidia immersed inside



### Management

- Hot water seed treatment at 45°C for 10 min. effectively controls the disease.
- Removal of collateral hosts *Isachne elegans*, *Eragrostis tenuifolia* and *Cynodon dactylon*.

## 7. STEM ROT (*Sclerotium oryzae*)

### Symptoms

- Small black lesions are formed on the outer leaf sheath and they enlarge and reach the inner leaf sheath.
- It also affects tissues rot and abundant small black sclerotia are seen in the rotting tissues.



#### Favorable Conditions

- Infestation of leaf hoppers and stem borer.
- High doses of nitrogenous fertilizers.

#### Management

- Use of balanced application of fertilizer.
- Avoid flow of irrigation water from infected to healthy fields.
- Draining irrigation water and letting soil to dry.

### 8. Foot Rot or Bakanae Disease ( *Fusarium moniliforme* )

#### Symptoms

- Infected seedlings in nursery are lean and lanky, much taller and die after some time.
- In the main field, the affected plants have tall lanky tillers with longer internodes and aerial adventitious roots from the nodes above ground level.
- The root system is fibrous and bushy.





### Management

- The fungus is externally seed-borne.
- Treat the seeds with Thiram or Captan or Carbendazim at 2 g/kg.

## BACTERIAL DISEASES

### 1. Bacterial Leaf Blight (*Xanthomonas oryzae*)



#### Symptoms

- Seedlings in the nursery show circular, yellow spots in the margin that enlarge, coalesce leading to drying of foliage.
- “Kresek” (seedling wilt) symptom is seen in seedlings, 1-2 WEEKS after transplanting.
- The bacteria enter through the cut wounds in the leaf tips, become systemic and cause death of entire seedling.

#### Favorable Condition

- Heavy rain, heavy dew, flooding, deep irrigation water
- Severe wind and temperature of 25-30 C.
- Application of excessive nitrogen, especially late top dressing

#### Management

- Burn the stubbles.
- Use optimum dose of fertilizers.
- Avoid clipping of tip of seedling at the time of transplanting.
- Avoid flooded conditions. Remove weed hosts.

### 2. Bacterial leaf streak - *Xanthomonas oryzae* pv. *oryzicola*

#### Symptoms

- Fine translucent streaks are formed on the veins and the lesions enlarge lengthwise and infect larger veins and turn brown.
- On the surface of the lesions, bacterial ooze out and form small yellow band-like exudates under humid conditions.

**Management**

- Burn the stubbles.
- Use optimum dose of fertilizers.
- Avoid clipping of tip of seedling at the time of transplanting.
- Avoid flooded conditions.

**VIRAL DISEASES****1. Rice Tungro Disease (RTD) (vector –Green Leaf Hopper)****Symptoms**

- Infection occurs both in the nursery and main field. Plants are markedly stunted. Leaves show yellow to orange discoloration and interveinal chlorosis.
- Young leaves are sometimes mottled while rusty spots appear on older leaves.
- Panicles not formed in very early infection, if formed, remain small with few, deformed and chaffy grains.

**Management**

- Grow disease tolerant cultivars like Pankhari203, BM66, BM68, Latisail, Ambemohar102, Kamod253, IR50 and Co45.
- Control the vectors in the nursery by application of **Carbofuran** 170 g/cent 10 days after sowing to control hoppers.

**2. Rice Grassy stunt disease - *Rice grassy stunt tenuivirus***



**Symptoms**

- Plants are markedly stunted with excessive tillering and an erect growth habit.
- Leaves become narrow, pale green with small rusty spots.
- May produce a few small panicles which bear dark brown unfilled grains

**3. Rice ragged stunt disease – *Rice ragged stunt virus*****Symptoms**

- Formation of ragged leaves with irregular margins, vein swelling, **enations** on leaf veins may be formed
- Stunting of plants, delayed flowering, production of nodal branches and incomplete emergence of panicles.

**4. Rice yellow dwarf disease – *Rice yellow dwarf virus*****Symptoms**

- Prominent stunting of plants and excessive tillering are the characteristic symptoms of the disease.
- Leaves yellowish green to whitish green, become soft and droop.
- Plants usually remain sterile but sometimes may produce small panicles with unfilled grains.