

DISEASES OF WHEAT

S. No	Name of Diseases	Scientific Name
1.	Black or stem rust	<i>Puccinia graminis tritici</i>
2.	Brown or leaf rust	<i>Puccinia triticina</i>
3.	Yellow or stripe rust	<i>Puccinia striiformis</i>
4.	Loose smut	<i>Ustilago tritici</i>
5.	Flag smut	<i>Urocystis tritici</i>
6.	HILL BUNT OR STINKING SMUT	<i>Tilletia caries</i> / <i>T.foetida</i>
7.	Karnal bunt	<i>Neovassia indica</i>
8.	Foot rot	<i>Pythium graminicolum</i>
9.	Powdery mildew	<i>Erysiphe graminis</i>
10.	Leaf blight	<i>Alternaria trititica</i>

1. Black or stem rust - *Puccinia graminis tritici*

Symptom

- Symptoms are produced on almost all aerial parts of the wheat plant but are most common on stem, leaf sheaths and upper and lower leaf surfaces.
- They erupt through the epidermis of the host and are surrounded by tattered host tissue.
- The pustules are dusty in appearance due to the vast number of spores produced.



2. Brown or leaf rust - *Puccinia triticina*

Symptom

- The most common site for symptoms is on leaf blades, however, sheaths, glumes and awns may occasionally become infected and exhibit symptoms.



3. Yellow or stripe rust - (*Puccinia striiformis*)

Symptom

- Mainly occur on leaves than the leaf sheaths and stem.
- Bright yellow pustules (Uredia) appear on leaves at early stage of crop and pustules are arranged in linear rows as stripes.
- The stripes are yellow to orange yellow. The teliospores are also arranged in long stripes and are dull black in colour.



Favorable Conditions

- Low temperature (15-20°C) and high humidity during November – December favour black and brown rusts.
- Temperature less < 10o favours yellow rusts.



Management

- Avoid excess dose of nitrogenous fertilizers.
- Grow resistant varieties like PBW 343, PBW 550, PBW 17

4. Loose smut - (*Ustilago tritici*)

Symptoms

- The entire inflorescence is commonly affected and appears as a mass of olive-black spores, initially covered by a thin gray membrane.
- Once the membrane ruptures, the head appears powdery.



5. Flag smut - *Urocystis tritici*

Symptoms

- The symptoms can be seen on stem, culm and leaves from late seedling stage to maturity.
- The seedling infection leads to twisting and drooping of leaves followed by withering.
- Grey to grayish black sori occurs on leaf blade and sheath. The sorus contains black powdery mass of spores.





Favorable Conditions

- Temperature of 18-24°C.
- Relative humidity 65% and above.

Management

- Treat the seeds with carboxin at 2g /kg.
- Grow resistant varieties like Pusa 44 and WG 377.

6. HILL BUNT OR STINKING SMUT (*Tilletia caries* / *T.foetida*)

Symptoms

- The fungus attacks seedling of 8-10 days old and become systemic and grows along the tip of shoot.
- At the time of flowering hyphae concentrate in the inflorescence and spikelets and transforming the ovary into smut sorus of dark green.
- The diseased plants mature earlier and all the spikelets are affected.



Favorable Conditions

- Temperature of 18-20°C.
- High soil moisture.

Management

- Grow resistant varieties like Kalyan sona, S227, PV18, HD2021, HD4513 and HD4519.
- Treat the seeds with carboxin or carbendazim at 2g/kg.

7. Karnal bunt - *Neovassia indica*

Symptoms

- Symptoms of Karnal bunt are often difficult to distinguish in the field due to the fact that incidence of infected kernels on a given head is low.
- Symptoms are most readily detected on seed after harvest.



8. Foot rot - *Pythium graminicolum*

Symptoms

- The disease mainly occurs in seedlings and roots and rootlets become brown in colour.
- Seedlings become pale green and have stunted growth.
- Fungus produces sporangia and zoospores and oospores.

Favorable Conditions

- Wet weather and high rainfall.

Management

- Follow crop rotation.
- Treat the seeds with Carboxin or Carbendazim at 2g/kg.

9. Powdery mildew - *Erysiphe graminis*

Symptoms

- Greyish white powdery growth appears on the leaf, sheath, stem and floral parts.
- Powdery growth later become black lesion and cause drying of leaves and other parts.



Favorable Conditions

- Temperature of 20-21°C.

Management

- Spray wet table Sulphur 0.2% or Carbendazim @ 500 g/ha.

10. Leaf blight - *Alternaria triticina*

Symptoms

- Reddish brown oval spots appear on young seedlings with bright yellow margin.
- In severe cases, several spots coalesce to cause drying of leaves.

Favorable Conditions

- Temperature of 25°C and high relative humidity.

Management

- Spray the crop with Mancozeb or Zineb at 2 kg/ha.

