

Disease of Sugarcane

Major Diseases

S.No	Name of Disease	Scientific name
1.	Red Rot	<i>Colletotrichum falcatum</i>
2.	Smut	<i>Ustilago scitaminea</i>
3.	Sett Rot Or Pineapple Disease	<i>Ceratocystis paradoxa</i>
4.	Wilt	<i>Cephalosporium sacchari</i>
5.	Rust	<i>Puccinia erianthi</i>
6.	Gummosis	<i>Xanthomonas axonopodis</i> pv. <u><i>Vasculorum</i></u>
7.	Red Stripe	<i>Pseudomonas rubrilineans</i>
8.	Sugarcane Mosaic	<i>Sugarcane mosaic potyvirus</i>
9.	Grassy Shoot	<i>Phytoplasma</i>
10.	Ratoon Stunting	<i>Clavibacter</i>

1. Red rot - *Colletotrichum falcatum* (Perfect stage *Physalospora tucumanensis*)

Symptoms

- The first external symptom appears mostly on third or fourth leaf which withers away at the tips along the margins.
- Typical symptoms of red rot are observed in the internodes of a stalk by splitting it longitudinally.
- The presence of cross-wise white patches are the important diagnostic character of the disease.
- As the disease advances, the stalk becomes hollow and covered with white mycelial growth.
- The lesions are initially blood red with dark margins and later on with straw colored centers.



Favourable Conditions

- Monoculturing of sugarcane.
- Successive ratoon cropping.
- Water logged conditions and injuries caused by insects.

Management

- Avoid ratooning of the diseased crop.
- Soak the setts in 0.1% Carbendazim or Triadimefon 0.05% solution for 15 minutes before planting.
- Grow resistant varieties CO 62198, CO 7704 and moderately resistant varieties CO 8001, CO8201.
- Setts can be treated with aerated steam at 52 °C for 4 to 5 hours and by moist hot air at 54°C for 2 hours.

2. Smut - *Ustilago scitaminea***Symptoms**

- The affected plants are stunted and the central shoot is converted into a long whip-like, dusty black structure.
- In early stages, this structure is covered by a thin, white papery membrane.
- Affected plants are usually thin, stiff and remain at acute angle. The whip like structure, representing the central shoot with its various leaves, may be produced by each one of the shoots/tillers arising from the clump.

**Favourable Conditions**

- Monoculturing of sugarcane.
- Continuous ratooning and dry weather during tillering stage.

Management

- Remove and destroy the smutted clump (collect the whips in a thick cloth bag/polythene bag and immerse in boiling water for 1 hr to kill the spores).



- Follow crop rotation with green manure crops or dry fallowing.
- Grow red gram as a companion crop between 2 rows of sugarcane.
- Grow resistant varieties like Co 7704 and moderately resistant varieties COC 85061 and COC8201.

3. Sett rot or Pineapple disease - *Ceratocystis paradoxa*

Symptoms

- The disease primarily affects the setts usually two to three weeks after planting.
- The fungus is soil-borne and enters through cut ends and proliferates rapidly in the parenchymatous tissues.
- The affected tissues first develop a reddish color which turns to brownish black in the later stages.
- The severely affected setts show internodal cavities covered with the mycelium and abundant spores.
- The setts may decay before the buds germinate or the shoots may die after reaching a height of about 6-12 inches. Infected shoots are stunted.



Favorable Conditions

- Heavy clay soils
- Temperature of 25-30°C

Management

- Soak the setts in 0.05% Carbendazim 15 minutes.
- Use long setts having 3 or 4 buds.

4. Wilt - *Cephalosporium sacchari*

Symptoms

- The first symptom of the disease is visible in the canes of 4-5-month age.
- The affected plants are stunted with yellowing and withering of crown leaves.



- The midribs of all leaves in a crown generally turn yellow, while the leaf lamina may remain green.

Favorable Conditions

- High day temperature (30-35°C).
- Low humidity (50-60%).
- Low soil moisture and alkaline soils.
- Excess doses of nitrogenous fertilizers

Management

- Avoid the practice of ratooning in diseased fields.
- Burn the trashes and stubbles in the field.
- Grow coriander or mustard as a companion crop in the early stages of crop.
- Dip the setts in 40ppm Boron or Manganese for 10 minutes or in 0.25% Emisan or 0.05% Carbendazim for 15 minutes.

5. Rust - *Puccinia erianthi*

Symptoms

- Minute, elongated, yellow spots usually 2-10 x 1-3 mm appear on both the surfaces of young leaves.
- The pustules turn to brown on maturity. Late in the season, dark brown to black telia appear on the lower surface of leaves.
- In severe cases, the uredia also appear on the leaf sheath and the entire foliage looks brownish from a distance.



6. Gummosis - *Xanthomonas axonopodis* pv. *Vasculorum*

Symptoms

- The bacterium produces two distinct types of symptoms. On the mature leaves, longitudinal stripes or streaks,
- 3-7mm in width and several cm in length, appear around the affected veins, near the tip. Initially these stripes are pale yellow in color, later turn to brown.
- The affected tissues slowly dry up.

Management



- Remove and burn the affected clumps and the stubbles in the field. Select setts from disease free areas.
- Avoid growing collateral hosts like maize, sorghum and pearl millet near the sugarcane fields.

7. Red stripe - *Pseudomonas rubrilineans*

Symptoms

- The stripes appear as water soaked, long, narrow chlorotic streaks and become reddish brown in few days.
- The stripes remain confined to lower half of the leaf lamina and whitish flakes spreads to growing points of the shoot and yellowish stripes develop, which later turn reddish brown.
- The rotting may commence from the tip of the shoot and spreads downwards. The core is discolored to reddish brown and shriveled and form cavity in the centre. In badly affected fields, a foul and nauseating smell appears.



Favourable Conditions

- Continuous ratooning and prolonged rainy weather with low temperature (250 C)

Management

- Whenever the disease is noticed; the affected plants should be removed and burnt.
- Growing resistant varieties Select setts from the healthy fields.
- Avoid growing collateral hosts near the sugarcane fields.

8. Sugarcane Mosaic - *Sugarcane mosaic potyvirus*

Symptoms

- The disease appears more prominently on the basal portion of the younger foliage as chlorotic or yellowish stripes alternate with normal green portion of the leaf.
- As infection becomes severe, yellow stripes appear on the leaf sheath and stalks.

- The necrotic lesions also develop on the internodes and the entire plant becomes stunted and chlorotic.

Management

- Chemical sprays to manage the insect vector population in early crop stage.
- Grow mosaic-resistant or, at least, tolerant varieties.

**9. Grassy shoot - *Phytoplasma*****Symptoms**

- The disease is characterized by the production of numerous lanky tillers from the base of the affected shoots.
- Leaves become pale yellow to completely chlorotic, thin and narrow. The plants appear bushy and 'grass-like' due to reduction in the length of internodes premature and continuous tillering.
- The affected clumps are stunted with premature proliferation of auxiliary buds. Cane formation rarely occurs in the affected clumps, if formed, thin with shorter internodes having aerial roots at the lower nodes.

Management

- Pre-treating the healthy setts with hot water at 52°C for 1 hour before planting
- Treating them with hot air at 54°C for 8 hours.
- Spraying the crop twice a month with insecticides.

10. Ratoon stunting - *Clavibacter***Symptoms**

- Diseased clumps usually display stunted growth, reduced tillering, thin stalks with shortened internodes and yellowish foliage.
- Orange-red vascular bundles in shades of yellow at the nodes are seen in the infected canes.



Management

- Select the setts from disease free fields or from disease free commercial nursery.
- Remove and burn the clumps showing the disease incidence.
- Treat the setts before planting, as specified for grassy shoot disease.

MINOR DISEASES

1. Damping-Off
2. Downy Mildew
3. Eye Spot
4. Ring Spot
5. Leaf Scald
6. White Leaf

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