

### RED ROT OF SUGARCANE

**Pathogen:** *Colletotrichum falcatum* (teliomorph: *Glomerella tucumanensis*)

**Taxonomic Position:** Sub Div.: Deuteromycotina, Class: Coelomycetes, Order: Melanconiales, Family: Melanconiaceae.

**Distribution and Importance:** The disease is worldwide in occurrence and is prevalent in all the sugarcane growing countries. In India, the disease is prevalent in Uttar Pradesh, Madhya Pradesh, Bihar, Orissa, West Bengal, Rajasthan, Haryana, Punjab and almost all the parts of India wherever sugarcane is cultivated. It occurred in epiphytotic form in eastern U.P. and Northern Bihar between 1939-1942.

**Symptoms:** It is difficult to recognize the disease in its early stages in the field. First symptoms are seen after rainy season when plant growth stops and sucrose formation starts. The first external symptoms of the disease are loss of colour and drooping of upper leaves, 3<sup>rd</sup> or 4<sup>th</sup> from the top. Thereafter entire tip withers. In later stages, the canes themselves show the effects. They become shriveled, the rind shrinks and becomes longitudinally wrinkled. Such canes are lighter in weight and are easily broken. If the diseased canes are split open longitudinally, especially when withering of leaves starts, the pith is found reddened. Characteristic bands of clear white areas are found running transversely across the full breadth of the reddened pith. The juice often gives a bad (alcoholic) odour and does not set well on boiling due to conversion of sucrose into glucose and alcohols as a result of enzymic action of the pathogen. Late in the season, minute velvety, dark dots (acervuli of the fungus) are formed near about the nodes of the diseased canes and also in shrunken areas.

**Pathogen:** *Colletotrichum falcatum* is an imperfect fungus and perfect stages are very rarely seen in nature and then it is called *Glomerella tucumanensis*. The fungal mycelium is intercellular between the pith cells of the host. They are slender, hyaline, branched and septate. The cells contain droplets of oil. The hyphae produce greenish black chlamydospores in the pith cells. The chlamydospores remain dormant in soil for long periods. The acervuli develop beneath the epidermis on rind as well as on mid rib of leaves, are minute dot like, black and velvety. From the upper surface of each stroma, arise conidiophores and setae. The setae are rigid, long hair-like structures. They are septate each with four septa. Conidiophores are small, aseptate, clavate, single celled and hyaline. Conidia which are developed singly on conidiophores are single celled, hyaline, sickle (falcate) shaped and thin walled. Each conidium contains a large oil globule in the centre. Conidia are short-lived and thus germinate immediately in the presence of moisture.

**Disease cycle:** The disease is soil-borne as well as seed-borne. It has been observed that the sugarcane setts harbour the fungus and thus the disease is perpetuated from year to year. It has also been observed that the fungus is capable of growing and producing acervuli in the soil but the primary infection is brought about mainly from infected setts. Secondary spread of the disease takes place by means of conidia from acervuli found on the mid-rib lesions. Conidia infect the leaves through wounds. Stem infection takes place through wound created by insect borers.

**Disease Management:** Prior to sowing, the setts should be properly inspected and if any type of reddening is noticed, the setts should be discarded for sowing.

1. The practice of field sanitation should be adopted. After harvesting the crop, the plant debris should be destroyed carefully by burning them.
2. The crop rotation of two years should be practiced.
3. The rationing of the infected plants should always be discouraged.
4. Resistant varieties such as CO-846, CO-951, 1148, COS109, BO-3, BO-7, BO-32 should be cultivated in the areas of higher prevalence.
5. One hour treatment of setts in 0.5% carbendazim solution reduces the incidence of the disease from infected setts.

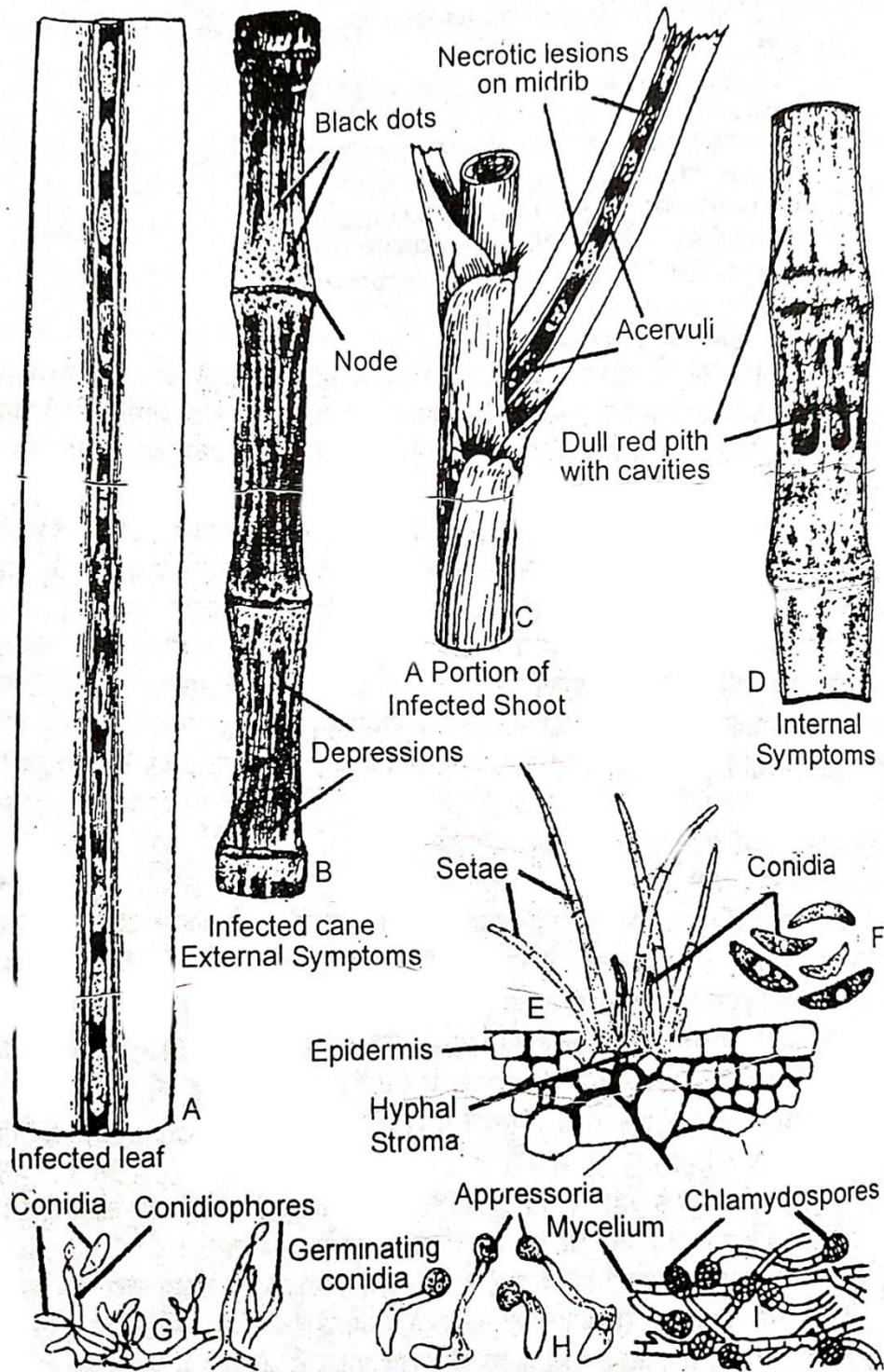


Figure: Red Rot of Sugarcane