The importance of diseases as a constraint in the production and productivity of sugarcane is well recognized. It is estimated that losses caused by diseases range from 10 to 15 per cent. Diseases of sugarcane are caused by different kinds of pathogens viz., fungi, bacteria, viruses and mycoplasma. Among fungal diseases, red rot and smut are very important and cause severe yield losses in tropical and subtropical India.

1. RED ROT
Red rot disease caused by *Colletotrichum falcatum* Went is the major constraint for sugarcane cultivation in most parts of India.

The disease is primarily caused through infected setts. The secondary spread of the disease occurs during monsoon period when high humidity condition prevails. Sporulating conidia from the infected canes of the susceptible varieties are carried through rain splash and irrigation water to the adjoining cane area resulting in secondary spread. Fresh surviving debris of red rot inoculum also serves as a source for further spread of the disease. Red rot disease can be managed by following integrated approaches as mentioned below.

1. Setts should be selected from red rot free area in order to eliminate primary source of infection.
2. Movement of red rot infected canes from red rot prone area to red rot free area should be prevented through domestic quarantine legislation.
3. If primary infection is noticed, the infected stocks should be destroyed immediately.
4. If the plant crop is infected by red rot, it should not be ratooned.
5. Red rot infected plant crop should be harvested on a priority basis to prevent secondary spread.
6. Red rot infected sugarcane fields should be rotated with paddy crop to destroy surviving debris borne inoculum in the field.
7. Red rot resistant varieties viz. Co 8021, Co 7704, Co 86010, Co 86011, Co 86249, Co 93009, CoG 93076, CoSi 95071 and CoV 92102 (Tropical), Co 89003, Co 93026, Co 97017, Co 98015, CoH 101, CoPant 94211, CoS 8432, CoS 8436 and CoS 96208 (Sub-tropical) can be grown in red rot endemic areas.

2. SMUT
Smut is an important fungal disease which causes yield and quality losses in sugarcane. It is widely prevalent in South India especially in parts of Karnataka, A.P. and Maharashtra. The wonder cane of Maharashtra Co 740 is highly susceptible to this disease. The disease is primarily transmitted through infected setts and secondary spread occurs through wind borne teliospores of the smut fungus. In Tamil Nadu a popular variety CoSi 95071 is highly susceptible to smut disease.

By proper seed selection, roguing of smut infected clumps and avoiding ratoons of plant crop with moderate smut infection, the disease can be easily managed. Setts from smut affected fields should be treated with hot water at 50°C for one hour or 52°C for half an hour.
hour along with systemic fungicide Bayleton (Tridemephon) at 0.1% concentration to eliminate the sett borne infection. The fungicide hot water treated sets should be raised as part of healthy seed nursery programme and distributed to farmers. Varieties Co 449, Co 527 and Co 6806 are consistently resistant to smut disease.

**SETT ROT**

Sett rot is caused by the fungal pathogen *Ceroticystis paradoxa*. The disease is common in germinating sets. The disease is primarily spread through soil borne inoculum under ill drained conditions. The fungus infects the sets mainly through the cut ends and slowly spreads to the entire parenchyma tenuous tissues. Sett rot infected sets fail to germinate leaving lot of gaps in the field. During the early stage of rotting fruity odour of pine apple is emitted due to production of ethyl acetate and it helps in identifying the disease. Sett treatment with systemic fungicide viz., Bavistin at 0.1% concentration is found effective in controlling the sett rot infection. Providing adequate drainage in the field will also help in avoiding the disease.

**WILT**

The disease is associated with fungi *Fusarium* sp. and *Cephalosporium sacchari* and the syndrome is predisposed by biotic and abiotic stress factors. Wilt fungi are weak soil borne pathogens. Abiotic factors like drought, water logging and drought followed by water logging weaken the root system and predispose the plant for wilt infection. Subterranean soil pests like white grub, root borer and nematode and insect pests like mealy bug, scale insect, fungal pathogens like root rot weaken the plant and root system paving the way for wilt infection. Elimination of biotic and abiotic stress factors will reduce the wilt incidence. Wilt can be effectively managed by using healthy sets, crop rotation with paddy and by application of organic manure in order to increase the antagonistic flora which can suppress wilt pathogen present in the soil.

**GRASSY SHOOT DISEASE (GSD)**

The disease is widely prevalent in all parts of India. It is mainly transmitted through infected sets. *Proutista moesta*, a derbid bug has been reported to transmit this disease. The disease is caused by a Mycoplasma like organism (MLO). GSD can cause very heavy yield loss particularly when planting material is obtained from infected sources. Yield losses in ratoon reach their maximum in crops in which primary infection appeared early in the plant crop.

GSD can be eliminated from infected sets by treating the sets in aerated steam therapy (AST) at 50°C for one hour. Roguing and eradication of GSD clumps are very much helpful in the reduction of GSD. Plant crop with high level of GSD should not be ratooned.

Integrated management of sugarcane disease is best achieved by using disease free seed sets, suitable cultural practices and heat therapy with the Three Tier Seed Nursery programme.

*Extension publication No: 86 (2004)*  
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*Published by: Dr. N. Balasundaram, Director, Sugarcane Breeding Institute, Coimbatore - 7*  
*Print by: Print Rite, Coimbatore - 2. ☎ : 0422 - 2546527*