REMEDIES

1.STEM BLEEDING

* Stem bleeding disease was first reported from Ceylon. Later on, it was observed in India, the Philippines, Malaya, Andamans and in Trinidad.

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| * The characteristic symptom of the disease is the exudation of a dark reddish brown fluid from cracks in the outer tissue usually found at the lower portion of the trunk, about 2m to 3m, from the ground. * The fluid turns black in colour as it dries up on the bark. |

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| **Large cavity in the diseased stem** | * The tissues beneath the bleeding patches become decayed and yellowish. * The infection may occur anywhere on the trunk, but is rarely observed on the soft portion immediately below the crown. * The symptoms exhibited by young trees are different from those described above. * On young palms, the spread of the disease is more rapid. |

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| **Darkening of affected stem** | * The external patches do not indicate the extent of the internal decay. * A general rot of the soft inner tissue takes place, leading to the formation of a cavity in the central portion of the stem and an accumulation of a thin yellowish fluid. * The fluid gushes out when the cavity is opened. * The decay when directed downwards to the bole, leads to the tree becoming hollow without any external symptoms. |

**Etiology**

* Spores of the fungus Thielaviopsis were observed in the liquid which oozes out.
* The same fungus was isolated from the discoloured tissue underlying the bleeding patches.
* The fungus was identified as T. ethaceticus which is identical to Thielaviopsis paradoxa or Ceratostomella paradoxa, the perfect stage of the fungus.
* The fungus being a wound parasite, makes its entry through growth cracks which normally occur on the coconut stem.

**Different types of stem bleeding**

* As mentioned earlier, the bleeding observed on the coconut stem may be due to several reasons and it might also be of different types.
* Three distinct types of bleeding have been recorded in Malaya
* The common type of bleeding due to the decay of the soft tissues about five centimetres thick, in which case, the bleeding takes place from all available cracks on the bark,
* Bleeding through abandoned white-ant galleries, and
* Bleeding from one single wound associated with a' New disease' recorded in Malaya.
* The disease caused by Ganoderma lucidum is associated with bleeding of the stem.
* Bleeding patches occur at the base of the trunk all round resulting in the slow death of the outer tissue; it extends higher up on the trunk as the infection advances.
* Occurrence of the stem bleeding due to physiological causes:
* Occurring on neglected gardens following heavy manuring and subsequent drought. In this case bleeding patches are reddish brown and circular, extending to a diameter of about seven centimetres and commencing from 0.5 m to 1 m from the base.
* The patches spread spirally about half way up the stem, and,
* Bleeding due to heavy rains following drought; in this group there are two types of bleeding   
  1. (a) in ill-drained soils following floods which does not cause much damage; and
  2. (b) on lands with fluctuating water table; the bleeding under these circumstances is extremely severe, the patches almost reaching the crown and often causing the ultimate death of the palms.

**Control**

* The disease can be controlled to a certain extent by carrying out the following treatments.
* The infected tissues should be cut out with a chisel.
* The inner affected tissues should be scooped out till no diseased tissues remain behind and dressing the wound with tar or Bordeaux paste.
* Since T. paradoxa is not considered a virulent pathogen, but a wound parasite, palms growing under unfavourable conditions having a large number of growth cracks are more susceptible to the disease as the growth cracks form the foci of fungal infection.
* Hence general improvement of the cultural conditions is indicated where the disease is of common occurrence.

BUDROT

* Palms of all ages are susceptible to the disease, but it is more frequent on young palms.
* Yellowing of one or two young leaves surrounding the spindle is the first symptom.
* The heartleaf becomes yellowish-green.
* Basal tissues of the leaf rot quickly and can be easily separated from the crown.
* Infection spreads to the older leaves, causing sunken leaf spots covering the entire leaf blade.
* Spot margins are irregular and water-soaked, and when the leaves are unfolded the characteristic irregular spots are conspicuous on the blade.
* In severely affected trees the entire crown may rot and in a few months the trees wilt.

**Etiology**

* Fungus perpetuates on the host debris, in crevices and natural openings of the dead tissue.
* With the onset of monsoon rains and favourable temperature (18°-20° C), the fungus becomes active and infects the tender host tissue. Control

**Control**

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| **Budrot treatment** | * Treated wound should be given a protective covering till the next normal shoot emerges. * Badly affected trees which are beyond recovery should be cut and burnt. |

* At initial stage of the disease when the spindle is just withering, application of Bordeaux paste (100 g copper sulphate and 100 g quick lime each dissolved in 500 ml of water separately and mixed together to make one litre) on the crown after removing the infected tissue and a thorough cleaning prevents the spread.
* All the healthy palms around diseased plants should be sprayed with one percent Bordeaux mixture or copper oxychloride (3 g/l).