



During rainy season

- Spray one per cent Bordeaux mixture: The initial spray is to be done immediately after the onset of monsoon showers and the second spray after an interval of 40 to 45 days. If monsoon prolongs, third spray should be given.
- A fine spray will be needed for effective spread of spray fluid over the surface of the nuts. Spraying operations are to be undertaken on clear sunny days.
- Collect and destroy of all fallen and infected nuts to prevent the spread of disease.
- Severe incidence of fruit rot during monsoon may lead to the incidence of bud rot and crown rot diseases. Hence, preventive measures to be taken up to control these diseases as well.
- Remove the infected tissues from the crown and treat the wound/ cut end with 10% Bordeaux paste. Cover the treated bud with protective covering till the normal shoot emerges.

Bordeaux mixture (BM) preparation for its use in plantation crops

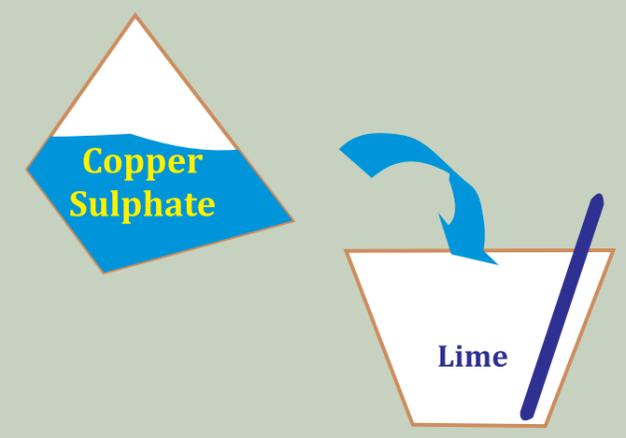
Preparation of 1 per cent Bordeaux Mixture (1:1:100)

1. Dissolve one kilogram of copper sulphate in fifty litres of water in a plastic bucket.
2. Dissolve one kilogram of quick lime in fifty litres of water separately in a plastic bucket.
3. Pour copper sulphate solution into the lime water slowly with constant stirring using a wooden stick.
4. The mixture is to be tested before use for the presence of free copper which is toxic to the plants. Dip a polished blade/ knife in the mixture. If the blade show a reddish colour, add lime to the mixture till the blade does not show staining on dipping
5. Bordeaux mixture should be sprayed while fresh.

6. Don't store it on standing; it loses its fungicidal property. However the mixture may be stabilized by adding sugar or jaggery at the rate of 1 Kg in 100 Litres of mixture. The stabilized mixture can be used within 3-4 days.

Precautions

- The solution should be prepared in earthen, wooden or plastic vessels. Avoid using metal containers for the preparation as it is corrosive to metallic vessels.
- Always copper sulphate solution should be added to the lime solution, reversing the addition leads to precipitation of copper and resulted suspension is least toxic.



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Prepared by

R. Ramesh, R. Maruthadurai and N.P. Singh

Published by

Dr. Narendra Pratap Singh

Director, ICAR Research Complex for Goa, Old Goa.

For details please contact

Dr. Narendra Pratap Singh

Director, ICAR Research Complex for Goa,

Old Goa - 403 402, Goa.

Ph: 0832-2284677/78/79

Email: director@icargoa.res.in

website: www.icargoa.res.in



MANAGEMENT OF FRUIT ROT (KOLEROGA/ MAHALI) DISEASE OF ARECANUT



ICAR RESEARCH COMPLEX FOR GOA

(Indian Council of Agricultural Research)

OLD GOA-403 402, GOA, INDIA.

Arecanut (*Areca catechu*) is an important commercial crop cultivated in India with an annual production of 0.48 million tonnes. Arecanut is attacked by a wide range of insect pests and diseases. Some diseases are lethal to the tree and others reduce the growth and productivity of the palm. Among the many reported diseases, fruit rot (commonly called as “Koleroga” in kannada or “Mahali” in malayalam) is a serious disease that could lead to great economic losses. The disease may cause fruit drop of 50 to 100 per cent in individual palms if timely and proper control measures are not adopted. Fruit rot disease occurs in all the arecanut growing regions receiving heavy rainfall during southwest monsoon period (June- September). In Goa, arecanut is cultivated throughout the State and the production is severely affected due to the incidence of the fruit rot. This



article discusses the nature of damage and the practices to be adopted for management of fruit rot in arecanut.

The pathogen

Fruit rot of arecanut is caused by the fungus *Phytophthora meadii*. *P. arecae* and *P. heveae* were also reported to be involved in the disease. Bud rot and crown rot diseases caused by the same fungus occur either as a further manifestation of the fruit rot infection or independently as fresh infection during the monsoon and subsequent cooler months. The fungus survives as oospores, chlamydospores and mycelium in soil, on fallen nuts, on dried nuts and on inflorescence remaining in the crown.

Symptoms

- Characteristic symptom is rotting and extensive shedding of the immature nuts which lie scattered near the base of the tree.



- Initial symptoms appear as dark green/ yellowish water-soaked lesions on the nut surface near the perianth (calyx).



- The infected nuts lose their natural green lustre, quality and hence have a low market value.



- The lesions on the fruits gradually spread covering the whole surface before or after shedding which consequently rot.



- White mycelial mass envelopes on entire surface of the fallen nuts.



- As the disease advances the fruit stalks and the axis of the inflorescence rot and dry, sometimes being covered with white mycelial mats.



- Infected nuts are lighter in weight and possess large vacuoles
- Infection occurring later in the season results in rotting and drying up of nuts without shedding called ‘Dry Mahali’
- The infection of heartleaf results in bud rot and crown rot initiates from the outermost leaf sheath, gradually spreads towards the growing bud. Both bud rot and crown rot are noticed during the Southwest monsoon season and continue in the cooler month falling in between October and February.