



**Biotica
Research
Today**
Vol 4:8
2022

601
602

Integrated Disease Management Strategy for Root Wilt in Coconut

M. Balasubramaniam

ICAR-Krishi Vigyan Kendra, Tirunelveli, Tamil Nadu
(627 852), India

 Open Access

Corresponding Author

M. Balasubramaniam
e-mail: balaagri94@gmail.com

Keywords

Coconut, Management, Root wilt, Symptoms

Article History

Received on: 22nd August 2022

Revised on: 24th August 2022

Accepted on: 25th August 2022

E-mail: bioticapublications@gmail.com

How to cite this article?

Balasubramaniam, 2022. Integrated Disease Management Strategy for Root Wilt in Coconut. Biotica Research Today 4(8):601-602.

Abstract

Root wilt disease caused by phytoplasma is one of the most devastating diseases of coconut palms. The major symptoms of the disease in leaves are wilting and drooping and flaccidity; ribbing, paling/ yellowing and necrosis of leaflets are typical symptoms of foliar diseases. Unopened pale yellow leaflets of spindle leaves are more susceptible to leaf rot disease, which is caused by *Exerohilum rostratum* and *Colletotrichum gloeosporioides*. The disease was transmitted by plant hoppers (*Proutista moesta*) and lace wing bug (*Stephanitis typica*). Phytoplasmas are generally present in the phloem sieve tubes and in the salivary glands of these insect vectors. Root wilt is a non-lethal, debilitating disease, and it can be efficiently managed by the following integrated management practices.

Introduction

Coconut palm (*Cocos nucifera* L.) is a versatile tree, popularly known as “King of Palms” and ‘Kalpavriksha’. It is a major plant as well as oilseed crop and is grown in more than 80 countries. The productivity of the crop is highest in India with 8303 nuts ha⁻¹. In India, four southern states contribute together 92% of the total coconut production in the country [Kerala (45.2%), Tamil Nadu (26.6%), Karnataka (10.8%) and Andhra Pradesh (8.9%)] and other states contribute 8%. Coconut palms are affected by more than 50 diseases worldwide. Among the diseases, root wilt disease (RWD) caused by phytoplasma is the most important one and was first observed in Kerala in 1882. It causes 35% yield reduction and the losses may extend up to 80% in severe cases. In India, the annual loss due to this disease was estimated around 968 million nuts year⁻¹ (Manimekalai *et al.*, 2010). Thus, it is a serious disease in most of the coconut plantations of Kerala and the nearby border districts of Tamil Nadu.

Coconut Root Wilt Disease Symptoms

Coconut root wilt disease symptoms in general, flaccidity, yellowing and marginal necrosis are the predominant symptoms. Affected leaflets become curved and bent downwards along the entire length and form a structure resembling the ribs of mammals. Reduction in the number of leaves and successive leaves become smaller, shorter and narrower resulting in the stunting of plants and reduction in the size of coconuts. Rotting of roots is considered to be one of the major symptoms. Flowering is delayed when palms were affected severely. The spadixes are small, weak and do not open normally and drying of spathe and necrosis of spikelets occur from tip to downwards. Shedding of immature

nuts and poor quality of nuts/ copra from the affected trees can reduce the yield potential. The disease is transmitted by phloem feeding lace wing bug (*Stephanitis typicus*) and plant hopper (*Proutista moesta*). Unopened pale-yellow leaflets of spindle leaves are more susceptible to leaf rot disease and causes reduction in photosynthetic area, disfiguration of the palms and reduction in yield apart from attracting a number of insects that feed, multiply and cause further damage (Ramjegathesh *et al.*, 2012).

Integrated Management Strategies for Coconut Root Wilt Disease

- Continuous monitoring of the plantation for root wilt disease incidence.
- Provision of proper drainage facilities and complete eradication of severely diseased palms.
- Application of 50 kg farm yard manure, 5 kg neem cake, 1.3 kg urea, 2 kg super phosphate and 3.5 kg of muriate of potash per tree per year in two equal splits at six month intervals.
- Soil application of 100 g *Trichoderma asperellum* and 100 g *Bacillus subtilis* by mixing with 5 kg farm yard manure tree⁻¹ at three month intervals. In addition, soil application of 100 g azospirillum, 100 g phosphobacteria and 50 g VAM fungus mixing with 5 kg farm yard manure tree⁻¹ at six month intervals will help plants in better nutrient uptake.
- Root feeding of TNAU coconut tonic @ 40 ml tree⁻¹ mixed with 160 ml of water at six month intervals.

- To manage the leaf hoppers and lace wing bug, neem powder 200 g or fipronil 0.3 G mixed with equal proportion of sand should be applied at the base of the crown. Pour hexaconazole 5 EC (2.0 ml + 300 ml water) in the crown region at 45 day intervals for managing leaf rotting symptom.

Conclusion

Root wilt is one of the important biotic constraints in coconut production which drastically reduces the nut yield. Detection of disease at early stage is highly essential to combat the disease and preventing the palm from death. Therefore the constant monitoring of the coconut garden is needed. The disease can be effectively managed by imposing the above said integrated disease management strategies.

References

- Manimekalai, R., Soumya, V.P., Sathishkumar, R., Selvarajan, R., Reddy, K., Thomas, G.V., Sasikala, M., Rajeev, G., Baranwal, K., 2010. Molecular detection of 16SrX1 Group phytoplasma associated with root (wilt) disease of coconut (*Cocos nucifera*) in India. *Plant Dis.* 94(5), 636. DOI: 10.1094/PDIS-94-5-0636B.
- Ramjegathesh, R., Karthikeyan, G., Rajendran, L., Johnson, I., Raguchander, T., Samiyappan, R., 2012. Root (wilt) disease of coconut palms in South Asia - an overview. *Archives of Phytopathology and Plant Protection* 45(20), 2485-2493. DOI: 10.1080/03235408.2012.729772.