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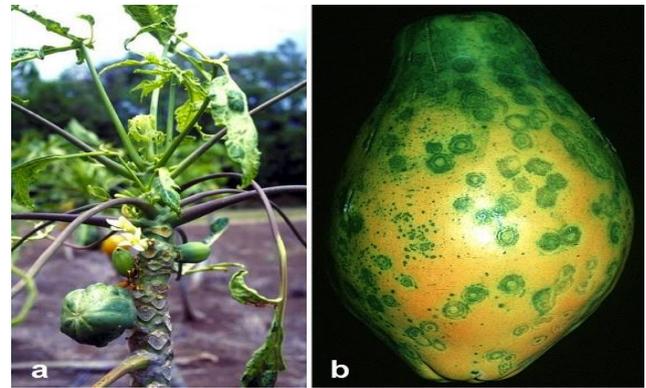
INTRODUCTION

The papaya ring spot disease is one of the most destructive diseases in papaya which is caused by virus viz., papaya ring spot virus (PRSV). PRSV is the detrimental foliage virus transmitted by the several species of aphids. Within the Potyvirus genus is the family Potyvirid which is mainly affecting papaya fruit tree. Along with ringspots, PRSV can cause a wide range of symptoms, such as leaves mosaic and chlorosis, water-soaked, greasy spots on the petiole and the top of the trunk, malformation of undeveloped leaves that may lead to shoestrings like symptoms, flower abortion, and stunting of infected plants. As a result, fruit production may be significantly reduced and fruit sugar or fructose is decrease up to 52 to 55%. Since its discovery in 1991, papaya ringspot disease (PRSV) has significantly impacted the production of papayas in the South East Queensland, Australia, regions ranging from Bundaberg to Gin. Additionally, reports of up to 95% of instances of this disease have been reported in eastern Uttar Pradesh. There are two different types of papaya ringspot viruses that are known to exist: type P (PRSV-P) infects both papaya and cucurbits, while type W (PRSV-W) only affects cucurbit plants like cucumber, melon, pumpkin, squash, and zucchini.

Symptoms of Disease

The symptoms of this disease is basically on fruit of papaya. On immature fruit, there are small green rings, spots or C shaped pattern visible. During maturity of fruit the ring and spot soar greater and more somber in hue. During time of ripening darker spot change into brown and yellow colour. A single fruits have ring spot count can range from minimum to excessive amount. The colour pattern of infected leaves become mottled and mosaic. One or more leaf lobes can undergo severe deformation and size reduction, resembling a shoestring. Petioles and stems may develop a dark green, water-soaked streak. Different ages of papaya plant are susceptible to this disease. Plants that suffer this disease may grow more slowly and produce less or no fruit. The resulting fruit may have a tougher texture, a weaker flavor, and a higher risk of developing black spot. Plants that are infected also have a shorter lifespan; in extreme circumstances, entire plants can die within months of

infection.



(a) Infected leaves of the tree (b) Darker brown ring spot

Mode of Transmission

The most common vector of papaya ring spot disease is Aphids. The primary vector which involves the spread of PRSV is aphids. Ring spot virus is a non-persistent type of virus which means it circulate only mouthpart of the aphids and does not multiply their body hemolymph. In this type of virus transmitted swiftly and readily between plants. There are different aphids species transmit the disease of Papaya ring spot but basically only two species of aphid viz., Peach aphid (*Myzus persicae*) and Melon aphid (*Aphis gossypii*) transmit the ring spot disease. Several virus types, including the Poty virus, Carla virus, Cucumo virus, Faba virus, Macula virus, and Alfamo virus, which are spread by vectors into the host plant, fall under this non-persistent category.

Nature of Damage

Peach aphid (*Myzus persicae*) and Melon Aphid (*Aphis gossypii*), both have piercing and sucking type of mouth part which pierce the stylus in epidermis of host plant and suck the cell sap specially phloem part of the plant from the tender part. There is no economic loss by the aphid but it is major role play as a vector which transmits the disease papaya ring spot in non-persistent manner.

Management

1. Initially, a diseased plant should be removed as soon as it is identified in order to prevent its spread.
2. Planting material viz., seed is free from any kind of disease.
3. Use Yellow Sticky trap to attract aphids and kill

them.

4. Adopting the two practices that is Rouging (removal of unknown plants) and Netting (prevent insect to transmit the virus).

5. Spraying insecticides to control the insect viz., Imidacloprid 17.8SL and Thiamethoxam 25% WG @ 1 ml litre-1.

CONCLUSION

Papaya ring spot disease is a major concern to lead to reduce the fruit weight and their quality, malformed fruit rejected during marketing. Infected leaves become curled and mosaic pattern than they check the photosynthesis process often plant is die. The destructive PRSV transmitted by two species of aphid in non-persistent manner. Efficacious management strategy is crucial for minimizing these effects. Key approaches to addressing the issue include: pest free planting materials, sticky traps and other agronomical practices effective aphid population control.

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