

ABSTRACT

"Studies aiming molecular characterization, early diagnosis, and control of papaya sticky disease".

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The "Stick Disease", also known as "Meleira", is a major factor limiting papaya (*Carica papaya* L.) production in Brazil. The first reports on this disease date from the late 1980's, when the disease was observed in papaya fields located in the South of Bahia and North of Espírito Santo State. Since then, this disease was also found in the states of Ceará and Paraíba. Papaya plants affected by this disease show a intense and apparently spontaneous latex exudation from the fruits. The exuded latex has an aqueous aspect, being more fluid than the typically milky latex found in healthy papaya plants. The fruit external surface becomes stained because the latex darkens by oxidation. Small stains are seen in the fruit fresh, just bellow the fruit surface. The fruit shows a softer consistency of the fresh and becomes less tasty, rendering fruits inappropriate for the market. A necrosis can be seen at the edges of young leaves in the top of some, but not all, infected plants (Brazilian Phytopathology 18:118-122, 1993; and 26:689-702, 2001). The etiology of this disease was recently confirmed after the development of the anticipated typical symptoms in papaya plants following infection with virus particles purified from latex collected from symptomatic fruits. The efficiency of the virus purification protocol was confirmed after successful purification of the viral particles in a different laboratory. A RNA of approximately 12 kb long was observed after removing the proteins from the virus particles. The double strand nature of the RNA was confirmed after treating it separately with S1 Nuclease, DNase T1 e RNase A. The dsRNA purified from the virus particle shows similar migration in a 1% agarose gel, as the 6×10^6 Daltons dsRNA purified directly from leaves (Brazilian Phytopathology 18:118-122, 1993). So far, the diagnosis of the papaya sticky disease is done by the symptoms shown in the fruits and by purification of dsRNA. Because of that, an infected plant can stay for months in the field acting as inoculum's source before it is identified and eliminated. The purification of dsRNA, from plant tissue or from virus particle is expensive, and labor and time demanding. In 2001, researchers at Embrapa Genetic Resources and Biotechnology, Department of Plant Pathology - UFV and INCAPER have joined efforts and initiated collaborative work towards the characterization of the genome of the causal agent of papaya sticky disease, as well as the development of protocols for early and massive diagnosis. Once partial or complete sequence of the dsRNA is obtained, and a protocol for diagnosis is in place, the group intends to initiate efforts on the development of tools for the genetic control of this disease.