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Talinum triangulare, new host of *Ralstonia solanacearum* in the Brazilian Amazon

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Fig. 1. Healthy plant of “cariru” (*Talinum triangulare*)

Talinum triangulare (Jacq.) Wiild, locally known as “cariru”, is a non-conventional vegetable crop of the Portulacaceae family cultivated in the margins of the Amazon River. It is consumed mainly in the North Region of Brazil, especially in the States of Pará and Amazonas, where its highly nutritious soft leaves (**Figure 1**) make it a reasonable substitute for spinach (*Spinacea oleracea*). It is well adapted to the local hot and humid weather and low soil fertility, what makes its cultivation an important economical activity for small growers. Worldwide, *T. triangulare* is cultivated in western Africa, Asia (India, Indonesia and Malaysia) and South America (Brazil and Peru) (Cardoso, 1997).

In March of 2000, in the green belt of Belém, State of Pará, plants of “cariru” were found naturally wilted, with leaves usually rolled downward. As a consequence, plant death occurred few days later. Affected plants showed discolored vascular bundles at the base of the stems, with characteristic bacterial oozing, typical of the bacterial wilt disease of solanaceous crops.

The bacterium was isolated in tetrazolium medium (Kelman, 1954), where it

yielded irregular-shaped white colonies with pink centers, resembling those of *Ralstonia solanacearum*. This causal agent was confirmed through a series of biochemical tests suggested by Hayward (1964). The pathogenicity of two isolates from distinct plants was confirmed in 20 plants of “cariru” and 10 plants of tomato ‘IPA-5’. Plants of “cariru” were prepared for inoculation either by rooting young stems or sowing seeds in styrofoam trays containing sterile commercial substrate. Rooted plantlets, obtained 15 days after stem rooting or 30 days after seed sowing, were inoculated by dipping their roots for 1 min in bacterial suspensions with approximately 10^8 cfu/ml. Thirty-day tomato plantlets were inoculated in the same manner to check for possible pathogen’s specificity. The inoculated plantlets were immediately transplanted to 1 L pots with sterile commercial substrate and thereafter maintained in a glasshouse (20-40 °C). Ten control plants of each species were similarly treated with water for control purpose. Within eight days after inoculation, all inoculated cariru and tomato plants wilted and died, contrasting with the controls, which remained symptomless (**Fig. 2**). The xylem region at the base of the stems of infected plants consistently showed reddish discoloration (**Fig. 3**), from where the bacterium could easily be re-isolated.



Fig. 2. Inoculated plant of “cariru” (left) showing typical wilting and downward leaf rolling.

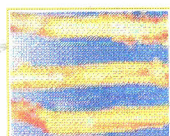


Fig. 3. Reddish vascular discoloration (two bottom stems) of “cariru” infected with *Ralstonia solanacearum*.

Biochemical tests proposed by Hayward (1964) indicated that both isolates from “cariru” belong to biovar I of *R. solanacearum*, which has been the biovar most frequently found in different hosts collected in the same geographic region, where bacterial wilt is endemic in most of the agricultural areas, caused either by biovar I or III.

This is apparently the first report of a member of the Portulacaceae family as a natural host of *R. solanacearum* in Brazil. *Talinum racemosum*, a wild species of the same genus of “cariru”, has been reported as a host of this pathogen in Medan, Indonesia (Palm & Fulmek, 1922 - cited by Kelman, 1953). *Portulaca oleraceae*, a weed species of worldwide distribution, is another Portulacaceae reported as a host of *R. solanacearum* (Moffett & Hayward, 1980). *Talinum triangulare*, therefore, increases the host range of *R. solanacearum* indicated by Kelman (1953) and Hayward et al. (1995), who listed about 200 species belonging to more than 50 botanical families infected by this pathogen.

This information is important to define strategies for bacterial wilt control in northern Brazil, as related to crop area selection and rotation. Additionally, since “cariru” is asexually propagated by cuttings, it is necessary to avoid spreading the disease through infected planting material.

Literature cited

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