



## Systemicity of *Xanthomonas vasicola* pv *musacearum* in flower-infected banana plants

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### Abstract

*Xanthomonas vasicola* pv *musacearum* (*Xvm*: previously *Xanthomonas campestris* pv *musacearum*) is the bacterium that causes Xanthomonas wilt of banana and is present in East and Central Africa. The disease is primarily spread by insect vectors, infected planting materials and contaminated garden tools. Banana plants infected through the inflorescence show four different disease symptom stages. The symptom stages are wilting of male bud (1<sup>st</sup> stage), decay of the rachis (2<sup>nd</sup> stage), premature fruit ripening (3<sup>rd</sup> stage) and rotting bunches (4<sup>th</sup> stage). A study was conducted to determine the systemicity of this bacterium after infection through flowers in order to correlate different disease symptom stages with the movement and location of the bacterium within the plant. Correlating

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different disease symptoms with the location of the bacterium in the plant would help to select appropriate disease control options. The study was carried out in Luwero district in central Uganda. Banana tissue samples were collected from the corm, true stem and leaf sheaths of cv. Pisang awak mother plants infected through flowers and exhibiting the four different disease symptom stages (30 plants per stage). In addition, samples were also taken from attached lateral shoots. The sampled plant tissues were taken to the laboratory for *Xvm* isolation. Inner tissues of surface sterilised samples were suspended in 1 ml of sterile water for 5 minutes to obtain a bacterial suspension. The suspension was serially diluted and 10 $\mu$ l of each suspension was spread plated on an isolation medium containing; yeast 5 gl<sup>-1</sup>, peptone 5gl<sup>-1</sup>, Glucose 10 gl<sup>-1</sup> and Agar 14 gl<sup>-1</sup>, incubated for 5 days at 25°C and observed for growth of *Xvm* colonies. Results showed that mother plants infected through flowers and showing 1<sup>st</sup> stage symptoms had the bacterium restricted to the upper parts of the true stem. However, for plants showing 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> stage of infection, the pathogen had moved down the true stem up to the base of the plant, and in some plants it had invaded the leaf sheaths, corm and lateral shoots. These findings suggest that if plants showing early inflorescence infection symptoms are cut down at the pseudostem base, the bacteria could be prevented from invading the corm and lateral shoots. In more advanced stages of disease development uprooting or using herbicides is recommended to destroy plants since the bacteria is likely to have already colonised the corm and lateral shoots.

*Key words:* *Xanthomonas* wilt, 'Pisang awak', male inflorescence.