

## ABSTRACT

### INVESTATION OF *Bacillus substilis* AND *Streptomyces angustmyceticus* AT PLANTING MEDIUM OF CAVENDISH BANANA (*Musa acuminata*, AAA) TO CONTROL FUSARIUM WILT

By

**RAKHMANSYAH ARIANTO WARDHANA**

*Fusarium* wilt of banana caused by *Fusarium oxyspoum* f. sp. *cubense* (Foc) is one of the most important and destructive diseases of banana and cause a significant production loss in banana plantation. The use of biocontrol agents against Foc has been reported to be an effective option for the management of the disease. The aim of this research was to evaluate the effectiveness of *Bacillus substilis* and *Streptomyces angustmyceticus* to control Foc in Cavendish banana under suppressive Foc endemic soil.

This research was conducted at PT Nusantara Tropical Farm (PT NTF) experiment station from October 2013 to August 2014. Using a randomized complete block design, 1920 healthy banana plantlets from tissue culture were assigned into 8 equal blocks (20 plantlets each) and subjected to 12 different treatments consisted of two factors. The first treatment factor was the place of bioagent investation: application at nursery; application in the field; application at nursery and in the field. The second factor was the type of bioagent applied: without bioagent as the control treatment; *B. substilis* strain 140-B; *S.*

*angustmyceticus* strain L3.1-DW; both *B. substilis* strain 140-B and *S.*

*angustmyceticus* strain L3.1-DW. Following the treatments assigned, all banana plants were maintained under the PT NTF's standard plantation cultivation techniques.

Results of this experiments showed that the investation of either *B.substilis*, *S. angustmyceticus* or both *B.substilis* and *S. angustmyceticus*, at nursery, in the field or both at nursery and in the field, could not control the disease. In addition, plant growth and production were not significant by difference among treatment. The percentage of Foc disease incidences in all of the treatments assigned were in the range of 46.4% - 60.4%, while the number of hands/bunch in healthy plants was in the range of 9.7-10.7 hands.

**Key Words:** Cavendish banana, *Bacillus substilis*, *Streptomyces angustmyceticus*, biocontrol, *Fusarium* wilt.