



Tropentag, September 20-22, 2023, hybrid conference  
“Competing pathways for equitable food systems transformation:  
Trade-offs and synergies”

## The influence of endophytic actinomycetes inoculation in rhizosphere soil on growth and yield quality of tomato

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### Abstract

The study aims to determine the influence of endophytic actinomycetes inoculation in rhizosphere soil on growth and yield quality of tomato. The experiment was conducted in a net greenhouse at the Agricultural Resource System Research Center, Faculty of Agriculture, Chiang Mai University, Thailand. The randomised completely block design (RCBD) was arranged for 4 treatments with 3 replications, which were (T1) Control (Growing material), (T2) Growing material inoculated with TGsR-03-04 (*Streptomyces violaceorectus*), (T3) Growing material inoculated with TGsL-02-05 (*Nocardiosis alba*), and (T4) Growing material inoculated with TGsR-03-04 (*Streptomyces violaceorectus*) and TGsL-02-05 (*Nocardiosis alba*) in tomato. Prior to the experiment, growing material properties analysis and microbial isolation were performed. Isolated actinomycetes of each treatment were inoculated into the root zone of tomato seedlings. Colonisation of actinomycetes into the root of tomato was analysed by Scanning Electron Microscopy (SEM). The height of tomato was measured at 14, 28, 56, and 112 days after transplanting (DAT) and final yield and yield quality of tomato was assessed at the maturity phase. The SEM result illustrated that the root of tomato seedling of all treatments were colonized by endophytic actinomycetes. It contributed to plant height at 14 DAT increased significantly as found in T2 (19.40 cm) compared to the control. Besides, all inoculated treatments enhanced yield and yield quality of tomato. The highest fruit width (42.05 mm), fruit length (53.73 mm), and fruit weight (48.98 g) were obtained by inoculation with the TGsR-03-04 (*Streptomyces violaceorectus*) (T2). There was no statistically difference in the number of fruits per plant and yield per plant when various inoculations of endophytic actinomycete were applied. Therefore, endophytic actinomycete especially TGsR-03-04 could be considerably used to improve the growth, yield and yield quality of tomato.

**Keywords:** *Lycopersicon esculentum*, *Nocardiosis alba*, root colonisation, *Streptomyces violaceorectus*