

# Pre-harvest treatment of kiwifruit trees with mixed culture fermentation broth of *Trichoderma pseudokoningii* and *Rhizopus nigricans* prolonged the shelf life and improved the quality of fruit

Qunfei Ma, Yunzhe Cong, Jiayue Wang, Chunyan Liu, Liting Feng and Kaoshan Chen

Postharvest Biology and Technology, Volume 162, April 2020, 111099

---

## Abstract

The effects of pre-harvest treatment of the rhizosphere soil of kiwifruit trees with mixed culture fermentation broth (MCF) of *Trichoderma pseudokoningii* and *Rhizopus nigricans* on post-harvest shelf life and fruit quality were investigated. The soil was irrigated with MCF in April, June, September, and November every year for two consecutive years. This agronomic measure significantly improved the productive parameters and quality traits of kiwi fruit and increased the total phenol and flavonoid content and superoxide dismutase (SOD) and peroxidase (POD) activities to different degrees on days 0, 10, and 15 during storage at 25 °C. Further, the protein bands at different storage periods increased or decreased with the gradient of fermentation broth. Metabolomics analysis of LC-MS/MS data revealed that treatment with MCF altered several metabolites, including phytohormone, amino acids, vitamins, and flavonoids. These findings highlight the importance of further investigating the utility of pre-harvest MCF treatment in prolonging the shelf life and improving the quality of fruit, which may promote more reasonable and effective utilization of biocontrol agents in the future.