

Whiteflies inspection on vegetables by NIR Spectroscopy

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Abstract

Whiteflies in fresh vegetables are a one of the most serious problems for Thai exporters to Europe. Due to the ability of whiteflies to carry and spread disease, they have a large impact on global food production. Zero insect was accepted as a standard for export. Whiteflies comprise the family Aleyrodidae are small hemipterans that typically feed on the underside of plant leaves. They are hard to remove from plants. Inspection for all stages of whitefly such as egg, pupa, larva and adult was hard because of their small size. They were only clearly seen under a microscope. NIRS was used to evaluate whiteflies in fresh vegetables, such as in parsley leaves. The aim of this study was to evaluate the capacity of NIRS to detect whitefly on vegetables. One-hundred-fifty-five vegetable samples with all stages of whitefly and uninfested controls were scanned by NIR spectrometer. NIR Spectroscopy is a nondestructive, rapid, accurate and precise method of detection. This study was to determine the efficacy of NIR spectroscopy using as an analytical technology for NIR region 400-2500 nm in reflectance mode was used. The effective model was established with $R = 0.88$ $SEC = 0.22$ $SEP=0.243$ $Bias = -0.0023$. NIRS technique will be introduced to exporter and office inspectors.

Keywords: NIR spectroscopy, whiteflies, Aleyrodidae, vegetables