

# **Sensing olive's diseases using visible/near infrared (VIS/NIR) spectroscopy**

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## **Abstract**

Olive (*Olea europaea* L.) is the most wide spread agricultural crop in Palestine. Recent data available reveal that there are more than 10 Million olive trees (67.3% of horticulture trees) grown in Palestine, covering more than 50% of agricultural land area grown with fruit trees. Olive production is very important to the Palestinian income contributing to about 13% of the national income during good years.

Unfortunately, the olive trees in Palestine are attacked by the peacock eye spot disease (Olive Leaf Spot (OLS)) caused by the fungus *Spilocaea oleagina*. The life cycle of the pathogen requires an incubation period of at least two weeks depending on environmental conditions. Conidia of the fungus may remain viable for several months. Early detection of the pathogen is an important step toward best control and management strategies. The use of visible/near infrared (VIS/NIR) spectroscopy might be a promising solution for sensing the severity and incidence of the OLS before visual symptoms appear on the leaves. The method has several advantages e.g. fast, relatively cheap and accurate.

This research is aiming to investigate the possibility of using VIS/NIR spectroscopy for sensing the severity of OLS. Preliminary results showed that VIS/NIR can predict the latent severity of OLS with an accuracy of at least 70%. Interestingly, the classification rate of OLS using VIS/NIR increased with increasing OLS severity on olive trees.

**Key words:** Palestine, *Spilocaea oleagina*, severity, VIS/NIR, remote sensing.