

Accepted Manuscript

Detection of Pre-symptomatic Rose Powdery-Mildew and Gray-Mold Diseases Based on Thermal vision

M. Jafari, S. minaei, N. Safaie

PII: S1350-4495(16)30568-0

DOI: <http://dx.doi.org/10.1016/j.infrared.2017.04.023>

Reference: INFPHY 2287

To appear in: *Infrared Physics & Technology*

Received Date: 18 October 2016

Revised Date: 29 April 2017

Accepted Date: 30 April 2017

Please cite this article as: M. Jafari, S. minaei, N. Safaie, Detection of Pre-symptomatic Rose Powdery-Mildew and Gray-Mold Diseases Based on Thermal vision, *Infrared Physics & Technology* (2017), doi: <http://dx.doi.org/10.1016/j.infrared.2017.04.023>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Detection of Pre-symptomatic Rose Powdery-Mildew and Gray-Mold Diseases Based on Thermal vision

M. Jafari¹, S. minaei^{*2}, N. Safaie³

Faculty of Agriculture, Tarbiat Modares University, Tehran-Iran

Tel.: +98-21-48292466

Fax: +98-21-48292200

Postal Code: 14115-336

Abstract

Roses are the most important plants in ornamental horticulture. Roses are susceptible to a number of phytopathogenic diseases. Among the most serious diseases of rose, powdery mildew (*Podosphaera pannosa* var. *rosae*) and gray mold (*Botrytis cinerea*) are widespread which require considerable attention. In this study, the potential of implementing thermal imaging to detect the pre-symptomatic appearance of these fungal diseases was investigated. Effects of powdery mildew and gray mold diseases on rose plants (*Rosa hybrida* L.) were examined by two experiments conducted in a growth chamber. To classify the healthy and infected plants, feature selection was carried out and the best extracted thermal features with the largest linguistic hedge values were chosen. Two neuro-fuzzy classifiers were trained to distinguish between the healthy and infected plants. Best estimation rates of 92.55% and 92.3% were achieved in training and testing the classifier with 8 clusters in order to identify the leaves infected with powdery mildew. In addition, the best estimation rates of 97.5%

*Corresponding author

Email addresses: mehrnoosh.jafari@modares.ac.ir (M. Jafari), minaei@modares.ac.ir (S. minaei*), nsafaie@modares.ac.ir (N. Safaie)

¹Graduated PhD student of Biosystems Engineering, Faculty of agriculture, Tarbiat Modares University, Tehran-Iran

²Associate Professor of Biosystems Engineering, Faculty of agriculture, Tarbiat Modares University, Tehran-Iran

³Associate Professor of Plant Pathology, Faculty of agriculture, Tarbiat Modares University, Tehran-Iran

Download English Version:

<https://daneshyari.com/en/article/5488601>

Download Persian Version:

<https://daneshyari.com/article/5488601>

[Daneshyari.com](https://daneshyari.com)