Project no.: 016279

Project acronym: ISAFRUIT

Project title: Increasing fruit consumption through a trans disciplinary approach leading to high quality produce from environmentally safe, sustainable methods

Instrument: Integrated project

Thematic Priority: Food Quality and Safety

Deliverable reference number and title
D 5.1.7 – results of preliminary biological test for crop health sensor

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Start date of project: 01-01-2006 Duration: 54 months

Organisation name of lead contractor for this deliverable: Applied Plant Research

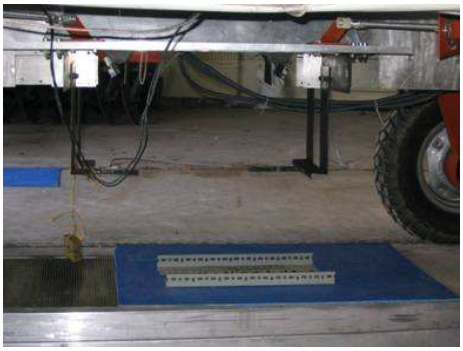
Revision: DRAFT

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	PU
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Description of deliverable:

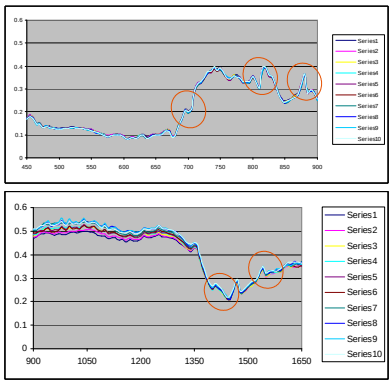
Methodology

A measuring tool developed for characterizing grass-swards has been adapted to measure picked single apple leaves placed on the floor underneath (fig. 1) in the laboratory. The device measures with two cameras the reflection in the band-widths 400-900nm and 900-1600nm. With this device spectral analysis measurements were performed on individual apple leaves from different varieties (Elstar, Jonagold, Rubens, Wellant, Autento). Both young shoots as old leaves were measured on the top and bottomside. For the varieties Elstar and Jonagold scab and mildew infected leaves were also measured.


Device developed for characterizing grass-swards (Fieldwatcher) used for spectral analysis of picked single apple leaves placed underneath in the laborat

First results show a difference in reflection between infected leaves and healthy leaves (figure). Spectral reflection of two cameras (400-900 nm and 900-1650nm wavelength) of apple leaves (cv. Elstar), red circles indicate areas of difference in reflection between healthy leaf and apple scab infected leaf. Based on the typical wavelength identified for apple scab on apple leaves the development of an apple scab specific sensor will start. Tests will be performed in an orchard to measure the scale of precision that can be reached.

Further data analysis is performed. Based on the data the development of the crop health sensor will start by identification of discriminant wavelength for water stress, nutrient stress, cultivar and disease stress. Further on lasers of different wavelength are to be identified, purchased and built in a sensor in the box for further development, and tests. The CHS can than be integrated in the ISAFRUIT crop adapted spray system, working together with the CIS and the EDAS.

References

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Zande, van de J.C., Wenneker, M., Meuleman, J., Achten, V.T.J.M., 2007. A Crop Health Sensor to minimize spray applications. 9th Workshop on Spray Applications Techniques in Fruit Growing – SuProFruit 2007 – September 12-14, Alnarp, Sweden.

Zande, J.C. van de, 12 september 2007. Development of a Crop Health Sensor (CHS) to minimise spray applications in Apple. 9th Workshop on Spray Applications Techniques in Fruit Growing – SuProFruit 2007, Alnarp, Sweden.

Randwijk, January 2008 Marcel Wenneker, Applied Plant Research