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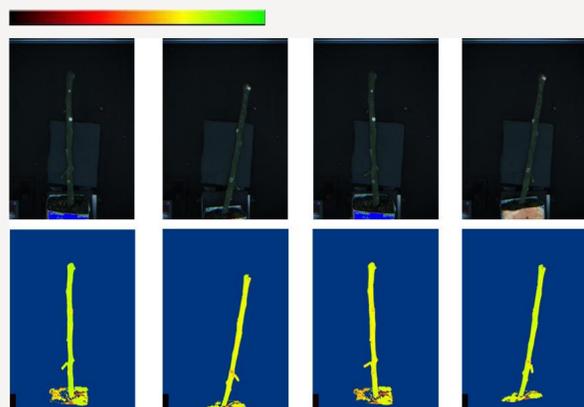


CF camera on platform (side crop viewer)

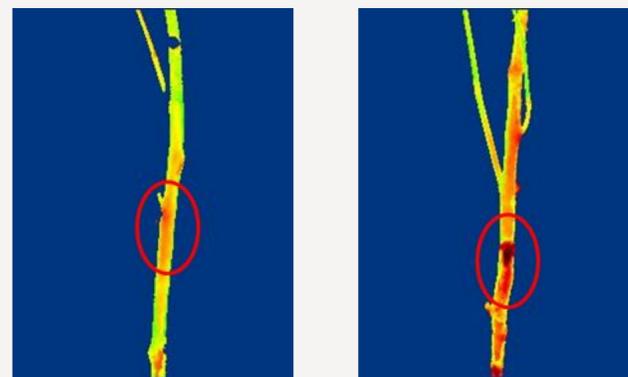
Realisation of a camera system enabling the (real time) visualization of Botrytis infection on the stem of crops such as tomato. The system uses stereo-vision for localization of the tissues prone to be infected (e.g. tomato stem) and chlorophyll fluorescence (CF) for assessing the health status of those tissues at a very early stage. This is possible because CF measures the conditions of the photosynthesis apparatus, which is very sensitive to stress. The CLK-Image analysis software calculates in 3D coordinates the spot that is suspected to be infected by Botrytis. A spraying boom can be connected to the system to spray fungicides at that precise spot, thereby optimizing health control in the greenhouse.



Camera system equipped with stereo-vision and CF-technology



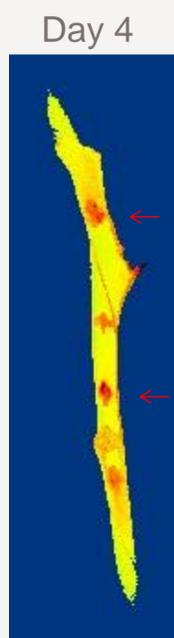
Healthy stems showing normal values in efficiency of photosynthesis. See colour scale (values from 0 to 1) at the top



Stems inoculated with Botrytis spores showing a significantly lower value in efficiency of photosynthesis at the inoculated spot. See colour scale (0-1) at the top left



Experiment on how early the CF camera can detect botrytis infection in tomato stems inoculated with botrytis spores.



Four wounds were made but only two of them (1 and 3) were inoculated. The first symptoms of infection appeared 4 days after inoculation on wound 1, and 5 days after inoculation on wound 3, although it became clearly visible one day later in both cases. Infection on wound 1 was detected by the CF camera 3-4 days after infection, and infection on wound 3 was detected 4 days after infection (see arrows). In conclusion, the CF camera could detect botrytis infection 1 day before visible symptoms appeared.

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