

The Fusarium calibration for VideometerLab provides an excellent Fusarium detection

Fusarium detection in barley

Validated and fast method detects Fusarium on barley in 10 seconds.

The focus on using barley without Fusarium infection is increasing. Fusarium on barley is an indicator of risk for negative impact on beer quality, e.g. gushing, and formation of mycotoxins.

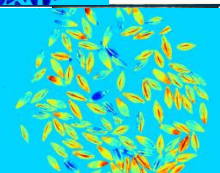
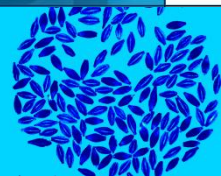
The multispectral VideometerLab combined with the Fusarium calibration now makes it possible to scan a barley sample for Fusarium infection. This method takes less than 10 seconds and there is no need for sample preparation with chemicals or costly consumables.

The VideometerLab saves both time and money, and is very easy to operate – after 3 simple steps:

1. Put a representative sample in a Petri dish.
2. Insert the Petri dish in the holder.
3. Activate measurement

The degree of Fusarium infection will be shown directly in a pseudo-color image – with orange/red areas indicating the degree of infection. Together with the pseudo-colored image the infection is also calculated as the relative area of infection.

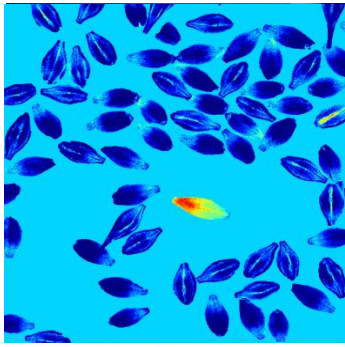
Behind the easy user interface is a high-performance spectral imaging system in which 18 images from ultra blue (405 nm) to NIR (970 nm) makes it possible to obtain a visualization of the Fusarium infection.



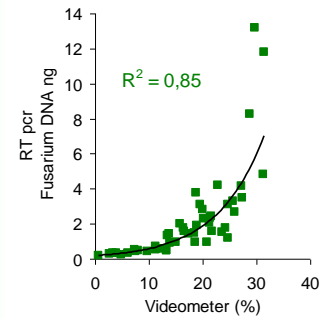
Pseudo-color images

- The blue barley kernels are without infection
- The red/orange areas are infected with Fusarium.





The infection will be shown in a pseudo image and calculated as percentage of infected area.



Detection of Fusarium

The Fusarium calibration for barley is developed together with **Carlsberg Research Center** and **Danish Malting Group**, and may become the preferred Fusarium screening method for barley. The calibration is based on an extensive set of barley samples with different levels of Fusarium infection. Several barley cultivars, collected from all over the world, are represented.

The calibration for barley has been industrially validated by Carlsberg Research Center. The result of 48 samples with different levels of infection gave an excellent correlation to real-time PCR ($R^2=0.85$). The validation set represented barley types from all over the world.

Instrument calibration using 3 calibration discs are needed for obtaining the impressive performance of the system. Calibration takes app. 4 minutes.

Detection of Fusarium requires:

VideometerLab	Light sources	18 high-power LED's emitting wavelengths from 405 to 970 nm
	Dimensions	420mm(h) x 220mm(w) x 220mm(d)
	Weight	15.8 kg
	Power supply	90-260 VAC, 47-63 Hz
	Power consumption	300 VA
	Ambient temperature	Operation: 5 - 40°C, Storage: -5 - 50°C
	Ambient humidity	20-90 % RH - non condensing

Stationary PC

Minimum requirements:

Intel Core2 Duo or better
4 GB RAM
Serial port (RS-232)
FireWire IEEE 1394a
110-240 VAC with proper ground connection
Dedicated graphics adapter (main board graphics should be avoided).

Software requirements

Windows XP with full windowsupdate
.Net Framework 3.5

Fusarium calibration

The validated Fusarium calibration.
Other calibrations, e.g. special Fusarium detection on malt, may be developed locally by the end-user or Videometer.

Comparison between VideometerLab measurements and the level of Fusarium DNA (Real-time PCR) shows an excellent correlation with Fusarium DNA level ($R^2=0,85$)



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