

Using Cgrain Value™ to test Malting Barley Quality

Fusarium in malting barley

The Fusarium fungus is a serious defect in malting barley as it produces toxins as well as is suggested to be one of the causes of "gushing", which makes beer spray uncontrollably from the beer bottle, when opened. The most significant sign of fusarium affected barley is a pink colouration on the kernel.

Manual analyses are subjective

The current manual analysis of properties, such as colour, is highly subjective. When measuring the uncertainty of visual defects, such as fusarium affected barley, prepared samples are often used that contain distinct pink kernels. This doesn't reflect the reality of the situation, as kernels that are hard to analyse aren't usually included in these samples.



The human eye differs in terms of colour vision and perceives colours differently depending on lighting and other factors. In Figure 1 below, the uncertainty of manual analysis of fusarium is shown. The uncertainty of manual analysis is said to 30% but it can be larger depending on the samples.

Figure 1 shows three manual analyses compared to one manual analysis.

Figure 2 shows Cgrain Value compared to one manual analysis, with a lower spread than that seen in Figure 1.

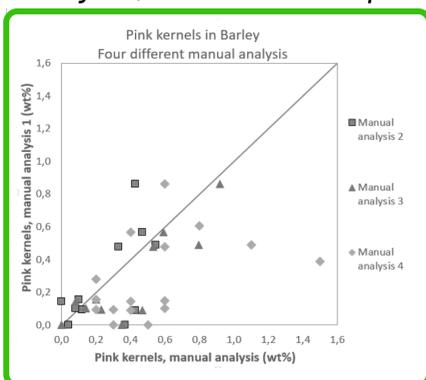


Figure 1

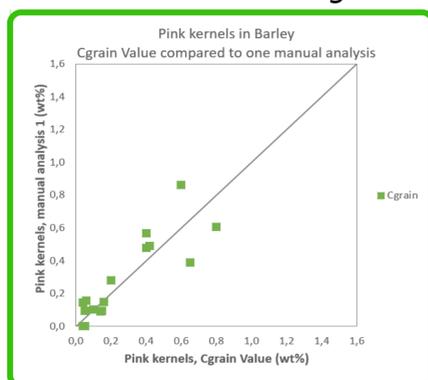


Figure 2

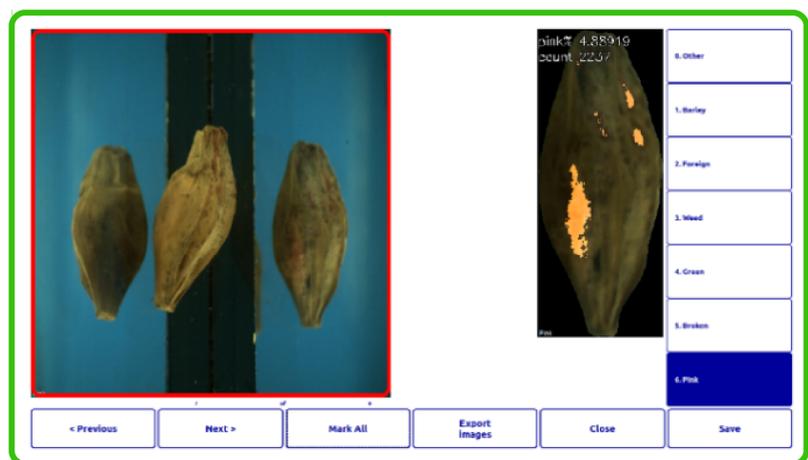
Cgrain Value™ has better repeatability for pink barley than manual analysis and analyses the same way, everytime.

For more information, please visit www.cgrain.se
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Cgrain Value™ - patented mirror design

In Cgrain Value's unique mirror design, almost all of the kernel surface can be assessed. This is particularly important in the case of fusarium affected barley, as the pink colour of fusarium might only be visible on one part of the kernel.

The image below, shows how Cgrain Value™ can detect the pink colour on one of the side views, ensuring a high detection rate and repeatability of the analysis, regardless of how the affected kernels are orientated.



Many quality defects analysed at once

Other quality parameters for the malting industry can be analysed at the same time, when using Cgrain Value; some of which can't be measured manually. An example of this is the size distribution of the sample as it is hard to measure the size of all of the seeds in a sample in another way. Other quality parameters that can be analysed at the same time include:

- Foreign seeds
- Broken kernels
- Green seeds
- Pink kernels
- Size distribution/Sieving analysis

The picture below, shows an example of the results from Cgrain Value™.

Reference:	BARLEYCONTROL1	Seed Count:	998	Weight:	50.50 g
Filtered As	Count	Percentage	Weight		
Sieving >2.2	990	99.57	50.28		
Sieving >2.5	938	96.08	48.52		
Sieving >2.8	761	81.91	41.36		
Other	0	0	0		
Barley	971	97.65	49.31		
Foreign	10	0.77	0.39		
Weed	0	0	0		
Green	4	0.32	0.16		
Broken	4	0.34	0.17		
Pink	9	0.91	0.46		

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