



## MYCOTOXINS IN COCOA

*Detection of mycotoxins as a means of reducing economic losses.*

Mycotoxin contamination is a major cause of economic loss in the cocoa sector. It is estimated that a quarter of all cocoa production is contaminated. Early detection is vital before cocoa is processed into a range of food products.

The recognition of the health hazards of mycotoxins has led to regulatory limits being set around the world, particularly in the European Union.

*Mycotoxins are harmful to humans. They can appear in the food chain as a result of fungal infection of crops, either by being eaten directly by humans, or by being used as livestock feed. Mycotoxins resist decomposition or being broken down in digestion, so they remain in the food chain. Temperature treatments, such as cooking and freezing, do not destroy mycotoxins. Mycotoxins can cause cancer, or target kidney, liver and immune systems.*

At present there is no testing method available that fits the needs of the cocoa industry. Instant, accurate and reliable results are needed in agricultural environments that are not reliant on expensive laboratory analysts.

The Optical Biosensor Project has developed technology consisting of:

- Optical chip technology – this allows sensitive detection to take place.
- Biochemical technology – when applied to the optical chip technology this allows specific detection of mycotoxins.

The optical technology is successfully completed and the biochemical technology is under development.

This rapid detection technology will enhance the quality and control of international cocoa production and trade by:

- Limiting risks to health associated with mycotoxins.
- Enabling cost effective testing in various stages of production, including pre-harvest stage. This early warning will help reduce the loss of harvests by quick intervention.
- Significantly reducing the cost and time of test and analysis. Testing will be affordable to less economically developed countries.
- Providing countries of origin with a technology, which can determine the stringent detection limits set by the EU.



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- Increasing the number of locations able to conduct tests and analysis.

The project is ongoing. Full details of the results and the availability of the optical biosensor will be posted on completion of the project in 2011.

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