# Innovations for utilising mycotoxin contaminated grain

When levels of mycotoxins in grain are so high that they cannot be used in animal feed then another option is to use as feedstock for bioethanol production. To avoid mycotoxins affecting the bioethanol production process, in MyToolBox novel mycotoxin degrading enzymes have been employed. It has been demonstrated that after enzyme treatment there is no effect on the quantity or quality of ethanol produced and the resulting toxin-free distillers' dry grain solubles (DDGS) is suitable for use as high protein animal feed.

MyToolBox

THE SMART WAY TO TACKLE MYCOTOXINS

For information contact:
**Rudolf** Krska
Project Coordinator
office@mytoolbox.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. **678012**

- **PREVENT FUNGAL CONTAMINATION**
- **REDUCE MYCOTOXINS IN THE FOOD CHAIN**

www.**mytoolbox**.eu

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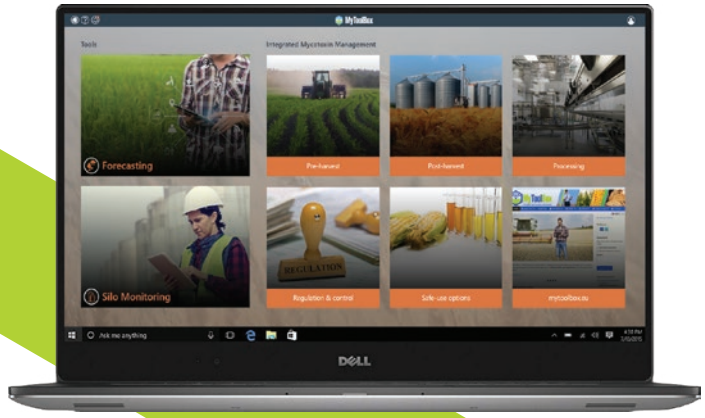
THE SMART WAY TO TACKLE MYCOTOXINS

# MyToolBox Platform
## unique advice & guidance

Mycotoxins result from fungal infection of commodities such as cereals, nuts, dried fruit and spices occurring either pre-harvest or during drying and storage. The accumulation of expertise in prevention and control of mycotoxins is now available in a unique web-based platform providing guidance to farmers, storage managers and food/feed processors and suppliers.

**mytoolbox-platform.com**

Interactive decision support tools provide customised advice to farmers and silo managers whilst best practice is advocated for wheat, barley, maize, dried figs and peanut production from sowing the crops through to harvesting, drying, sorting and storage.




# Silo management
## unique tool available

MyToolBox platform provides a customised decision support tool for silo managers. During storage, carbon dioxide, moisture and temperature are monitored with sensors strategically located inside silos. Data generated in real time is fed into sophisticated mathematical models which provide early warning of fungal growth and thus potential for mycotoxin contamination enabling preventive/corrective actions to be taken by silo managers. The use of carbon dioxide sensors is unique to MyToolBox providing more advance warning of problems in silos than conventional temperature/RH systems.

# Novel milling of cereals

Milling and processing mycotoxin contaminated grain reduces toxin levels in the highly processed fractions such as white flour but increases toxin levels in bran and fibre often destined for animal feed. However, new technological processes have been developed to enrich foods with bran high in fibre and other bioactive compounds, maximizing the benefits of whole grain foods and its components while limiting mycotoxin exposure. Industry guidelines have been developed for cleaning, optical sorting, hammer milling and sieving of durum wheat to produce products suitable for pasta production with the lowest achievable mycotoxin levels whilst maximising beneficial fibre content.

# Pre-and post-harvest up-to-date advice

Optimising choices of seed variety selection, crop rotation, tillage, fungicide treatment and harvesting are important factors in controlling mycotoxin formation. Advance warning of adverse weather conditions during flowering of cereals can alert cereal farmers to the need to spray against fungal infection. To this end, an interactive decision support tool has been developed using sophisticated mathematical models that use weather and agronomics as inputs, and provide field specific mycotoxin risk alerts to wheat farmers. More proactive treatment known as biocontrol can prevent toxigenic fungal strains proliferating in maize and minimise aflatoxin contamination. Best practice advice is given by MyToolBox in terms of rapid drying of crops to low water activity and effective cleaning prior to storage.

# Novel automated sorting of dried figs

Aflatoxin contamination of dried figs has been a long-standing problem. Traditional hand sorting under UV light is labour intensive and presents potential health risks to workers. Cameras operating in the near-infra red (NIR), located above a moving conveyor belt, can detect fungal contaminated figs above a threshold level and reject them with comparable efficiency to manual sorting. Commercialisation of this automated system for dried figs is planned **https://www.evk.biz/en/** with future application to other mycotoxin contaminated commodities.