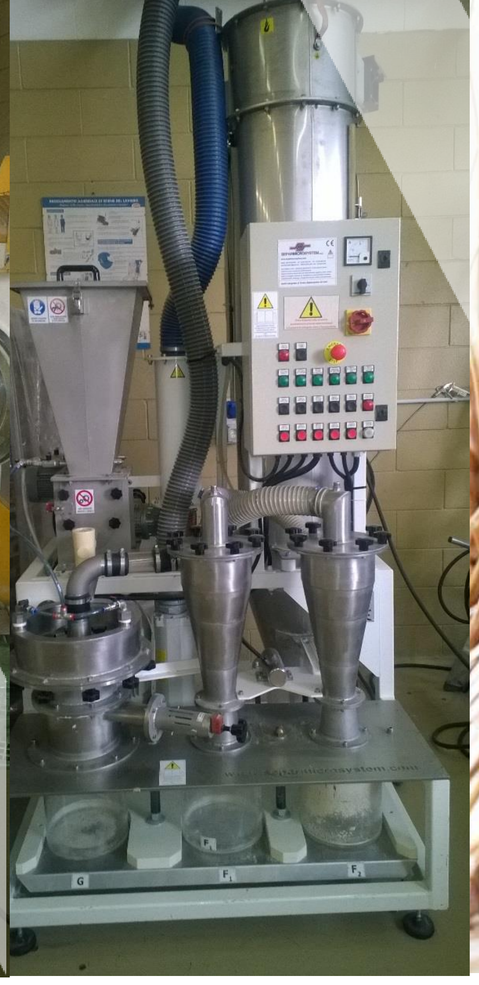
MyToolBox

THE SMART WAY TO TACKLE MYCOTOXINS



MyToolBox - €5 million EU-funded project - 23 partners from 11 countries including China and Turkey - 40% industry participation. MyToolBox is using new and existing knowledge to reduce financial losses due to mycotoxins in cereals in the food and feed chains.

MILLING STRATEGIES TO MINIMISE MYCOTOXINS AND INCREASE FIBRE

What are mycotoxins? Risk factors can lead to fungal infection of cereals (*Fusarium* head blight) producing chemical contaminants known as mycotoxins. Fungal growth can continue during drying and storage of grain with further production of mycotoxins. Mycotoxins are toxic to both humans and farm animals and therefore regulatory limits are applied to cereals and cereal products for food and feed.

Financial losses due to mycotoxins

The EU produces 133M tons wheat (€24 billion) per annum and 68M tons of maize (€13.5 billion) per annum. Annual losses due to mycotoxins are estimated to be 5-10%. Therefore €1.9 - 3.8 billion is estimated as lost as income only for wheat & maize.

How can milling reduce mycotoxins?

Fungal contamination and mycotoxins occur mainly on the outside of grain kernels. On the one hand cleaning and milling can reduce toxin levels in processed cereals (white flour) but concentrates toxins into fractions such as fibre. On the other hand whole white flour/semolina and products like fibre have beneficial bioactive substances and are seen as healthy foods. Milling that can reduce mycotoxins whilst retaining nutrients is highly desirable

Barilla

Barilla is investigating state-of-the-art technologies to remove mycotoxins (DON) from durum wheat, whilst also enriching nutrient components. Studies include use of

(1) 'Screen cleaner';

(2) Optical selecting systems using infrared sorting combined with colour detection technology;

(3) De-branner;

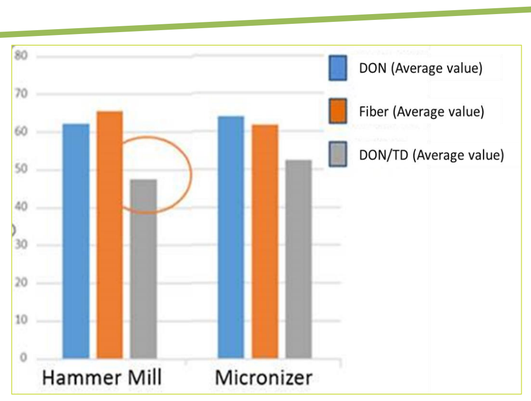
(4) Micronisation

(5) Hammer mill;

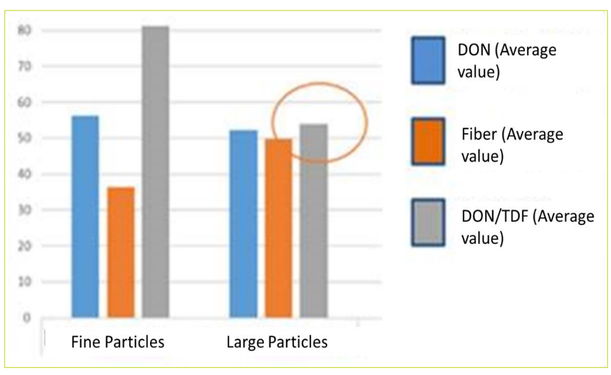
(6) Turbo air classifier; PlanSifter

Impact – To market bread & pasta with 10% increased fibre content & lowered DON exploiting the debranning fractions generated through the innovative (pre)milling processes

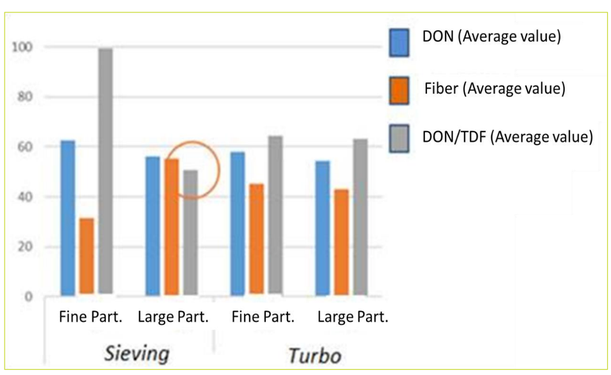
Results so far..



Deoxynivalenol content, fibre content and ratio deoxynivalenol to fibre, obained with Hammer Mill and Micronizer



Effect of Hammer Mill system vs Large/Fine particle size Fractioning configurations



Effect of different Fractionation systems & tuning

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