Fusarium mycotoxins in UK oats

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Fusarium mycotoxins are fungal toxins produced by species belonging to the *Fusarium* genus during infection of crops. Small grain cereals are susceptible to a disease called head blight which can result in harvested grains containing fusarium mycotoxins. Several different species of *Fusarium* can cause head blight and different species produce different mycotoxins. Worldwide, oats are generally considered less susceptible to head blight compared to wheat and barley.

In 2006 the European Commission set legislative limits for the fusarium mycotoxins deoxynivalenol (DON) and zearalenone (ZON) for cereals and cereal products intended for human consumption and guideline limits for feedstuffs. The legal limits for DON and ZON in oats intended for human consumption are 1750 and 100 ppb respectively. In 2013 the European Commission published a Recommendation that set indicative limits for the fusarium mycotoxins HT2 and T2, with a combined limit of 1000 ppb (HT2+T2) for oats intended for human consumption. The Recommendation requested Member States to continue monitoring HT2 and T2 in cereals and cereal products and to conduct investigations when indicative levels were exceeded, to determine why exceedances occurred, with an aim to consider legislative limits in 2015.

Surveys of commercial UK oat crops conducted from 2002-2008 identified that the legislative limits for DON and ZON were rarely exceeded in oats but that 16% of samples exceeded the indicative limit of 1000 ppb HT2+T2. Modelling of the associated agronomy data identified that variety and cereal intensity were key determining factors of HT2+T2 concentration in harvested oats. Spring oats had a lower average HT2+T2 content than winter oats and the average HT2+T2 content increased with increasing cereal intensity within a rotation. Subsequent analysis of grain samples from AHDB Recommended List variety trials clearly identified differences in HT2+T2 content between and within winter and spring varieties. Winter varieties tend to have a higher HT2+T2 concentration compared to spring varieties and have a broader range HT2+T2. Studies are ongoing to understand the cause of differences observed between varieties (See Abstract/Poster of Stancic et al).

Notes