Oats resistance to fungal contamination: genetics or sowing date?

Harper Adams University

Current Postgraduate Research Briefing

Oat varieties and food standards

Oats are a popular health food choice in the UK and have an excellent track record in food safety.

Under certain conditions a particular fungus (*Fusarium langsethiae*) can infect the oat plant and produce minute amounts of toxic substances, known as **mycotoxins**. If present in large amounts (unlikely in the UK) they could adversely affect human health.

Recommended European Union limits are in place for mycotoxins in oats for foods and animal feeds. These will be revised in 2015 then may become legal limits.

Previous Harper Adams University research discovered that **all** the winter oats varieties which were tested had **higher levels** of the mycotoxins (HT2 and T2) compared to spring varieties. Large differences in mycotoxin levels **among** the winter oats varieties were also apparent.

However, we didn't know whether the differences were because of sowing date or genetics.

Study aim

This study aimed to understand the variation in UK oat variety resistance to the mycotoxins (HT2 and T2). The level of resistance could be included in future when recommending varieties to farmers.

Use of The Princess Margaret Laboratories

Field trials were conducted in three UK locations over two years. Twelve varieties of winter and spring oats were sown in both winter and spring. The quantification of the fungal species (*Fusarium langsethiae*) is via the **qPCR equipment** and the mycotoxins via the **ELISA equipment** in **the Princess Margaret Laboratories** (see panel).

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So far....

Regardless of sowing date, certain oat varieties always had higher levels of the mycotoxins (HT2 and T2), indicating a strong genetic influence.

PhD programme

This briefing outlines the work of a three-year PhD research programme by **Tijana Stancic**, Postgraduate Researcher.

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ELISA

The enzyme-linked immunosorbent assay (ELISA) uses antibodies to quantify the mycotoxins.

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