



Agriculture & Horticulture
DEVELOPMENT BOARD



New Project

TF 203

An investigation of *Fusarium* species causing core rots and storage rots of apple

Project Number: TF 203

Project Title: An investigation of *Fusarium* species causing core rots and storage rots of apple.

Project Leader: Dr Angela M Berrie

Contractor: East Malling Research

Industry Representative: Giles Cannon
GSR Fruits Ltd

Start Date: 1st April 2012

End Date: 30th June 2013

Project Cost: £7,156

SUBJECT TO CONTRACT

Project Summary:

Species of the fungus *Fusarium* are the main fungal species responsible for core rots in both Bramley and Cameo and in other apple cultivars. They also occur as storage rots in Bramley, causing stalk, cheek and eye rots, particularly in longer term stored Bramley, where they can account for around 30% of the rotting (actual losses due to rots 2-10%). Several species of *Fusarium* have been isolated from core rots and post-harvest rots but the actual species have not been identified. Many species of *Fusarium* are known to produce mycotoxins most of which are harmful to humans and livestock. This project would make use of recent advances in *Fusarium* taxonomy based on molecular techniques to identify the *Fusarium* species isolated from core rots and storage rots. If the *Fusarium* species identified are mycotoxin producers then samples of Bramley, Cameo and other apple cultivars with and without *Fusarium* rots would be checked for mycotoxins

Aims & Objectives:

Project aim(s): Identification and importance of *Fusarium* rots in apples, particularly Bramley

Project objective(s):

- (i) To identify the species of *Fusarium* responsible for core rots and storage rots
To investigate whether mycotoxins associated with *Fusarium* spp. are found in apples

Benefits to industry

- Apples used for processing and in particular for juice production are generally routinely checked for the mycotoxin patulin produced by certain species of *Penicillium*
- *Fusarium* species also produce several mycotoxins most of which are harmful to humans. *Fusarium* species cause ear blights in cereals and cereal products are routinely screened for these mycotoxins. EU mycotoxin regulations have maximum limits which vary depending on the type of mycotoxin and the end use of the grain. Deoxynivalenol, a mycotoxin commonly found in UK grain has a limit of 1250 parts per billion in unprocessed wheat, 750 ppb in flour and 200ppb in baby food
- *Fusarium* species have been shown to cause core rots and post-harvest rots in apples, particularly Bramley
- Currently identification of the *Fusarium* species in apple in the UK and whether they produce mycotoxins has not been determined
- This project will identify the *Fusarium* species present and also establish whether mycotoxins are present in apple
- This information is important to the industry because of the potential health risks to humans and the negative publicity that could result. Therefore the industry needs to be aware of the risks, if any, so that future action can be planned

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