



Horticultural
Development
Company

New Project

SF 106

Developing breeding and selection tools to reduce spoilage of soft fruit and wastage in the supply chain (HortLINK)

Project Number:	SF 106
Title:	Developing breeding and selection tools to reduce spoilage of soft fruit and wastage in the supply chain (HortLINK)
Start and end dates:	1 July 2009 to 30 June 2012
Project Leader:	Dr Julie Graham, SCRI
Project Co-ordinator:	Mr Peter Thomson, Thomas Thomson (Blairgowrie) Ltd
Location:	Scottish Crop Research Institute, Dundee

Background and project objectives

This project aims to develop robust assisted breeding and selection tools that will enable raspberry and strawberry breeders to accelerate new variety development with extended shelf-life and thus reduce fruit spoilage and waste in the supply chain. There is a unique opportunity to identify the genetics of fruit softening by using the Glen Moy x Latham raspberry mapping population, which is already an established and successful resource for quantitative trait loci mapping. The Glen Moy x Latham raspberry map and the gene resources developed in current HortLINK project (SF 76), along with the latest next generation sequencing technologies (454) to exploit fruit genetic resources for end user benefit, will be used to tackle fruit softening, which currently costs the industry a minimum of £5 million in waste annually in a good season.

Softness is largely dependent on genes and their action under differing conditions. In order to reduce the amount of waste fruit and all associated packaging, cost etc., tools are available at SCRI that will allow us to use raspberry as a model crop to identify and investigate important fruit softening genes and their expression in response to abiotic stresses (e.g. temperature and water) to identify robust genes/markers showing limited environmental effects for breeding varieties with reduced fruit softening. A new generation of genomic tools (454 mRNA-seq, genotyping, alternative splicing panels) exist and give us the opportunity to identify genes that are expressed in raspberry fruit. Other tools such as a *Rubus* database, existing fruit EST libraries as well as a large insert genomic library (BAC library) and information about networks controlling tomato and strawberry fruit ripening (through association with Nottingham University) will also be available to the project.

Resources from other *Rosaceous* crops will allow validation of robust genes/markers in other fruit. DNA markers for screening commercially acceptable traits in new selections can greatly improve the accuracy of breeding and will reduce the time involved in development of new cultivars. Stresses in the supply chain will also be examined to develop the best method of assessing fruit softening.

Further information

Email the HDC office (hdc@hdc.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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