Maps mark the route to longer shelf-life

The rate at which raspberries soften after harvest is one of the main factors affecting spoilage in the supply chain. Breeders already select seedlings from their crossing programmes which offer the right fruit firmness and shelf-life – a task which can be speeded up significantly by the use of a genetic technique known as marker-assisted breeding.

The project
This Defra Horticulture LINK project is identifying molecular markers linked to the genes that are involved in fruit ripening and softening. Markers are simple characteristics that can be easily tested for in the laboratory but which are linked on the plant's chromosomes to complex traits such as disease resistance, flavour or, in this case, control of the ripening process, which would take breeders years to select for in glasshouse or field trials. The project builds on earlier work atSCRI which has produced a genetic map for raspberry, based on the 'genetic fingerprints' of a population of seedlings from crosses between the varieties Latham and Glen Moy.

Results so far
Fruit samples from both field and tunnel production from the Latham x Glen Moy offspring have been assessed for softness using a texture analyser. The measurements found significant variation between these clones related to fruit firmness and fruit weight. Comparing the firmness measurements with the plants' genetic fingerprints has identified 16 genes with likely roles in fruit softening and these have been added to the genetic map. Those implicated in cell wall breakdown and regulation of turgor pressure are significantly associated with firmness scores but further research is needed before we can say they are definitely responsible for regulating softening.

The firmness and shelf-life characteristics of fruit from 22 different clones from the Latham x Glen Moy cross were compared with those of both parents and three commercial varieties over seven days of storage at 4°C. Fruit from six of the clones remained significantly firmer than all others during the test.

As The Full Grower Summary for project SF 108 can be found on HDC's website www.hdc.org.uk

Collaboration finds a better berry

HDC’s Soft Fruit Panel is committed to working with other organisations to breed and bring on new and improved strawberry varieties. Its members believe that the work of the EMR Strawberry Breeding Club is vital and must be supported to safeguard the development of new high quality selections which are available to all UK growers.

As we continue in our quest to improve the quality of strawberry varieties, UK growers will be pleased to know that HDC involvement ensures that varieties emerging from the EMR Strawberry Breeding Club will be available to all.

Graham Moore, FAST

Buddy: an everbearer with firm, glossy fruit and outstanding flavour

The projects
HDC currently has two shares in the breeding club (SF 98), HDC technical manager for soft fruit Andrew Tinsley and Soft Fruit Panel chairman Harriet Duncafe represent the interests of UK strawberry growers to ensure that the breeding programme is focused on the industry's needs.

HDC also currently funds a polycultured mainseason strawberry variety trial (SF 92a) which assesses some of the club's best selections and compares these to standard varieties and to some of the newest varieties from other breeding programmes.

Results so far
In 2011, growers, marketing groups and retailers have been evaluating Serenity and Buddy, the first two varieties to emerge from the club’s breeding programme, in advance of their predicted release in 2012.

Serenity is a new improved clone of the June-bearer Florence. It has similar attributes (multiple disease resistance, late season, excellent flavour) but a lighter, more attractive skin colour. Buddy is an everbearer with firm, glossy fruit of a regular shape and outstanding flavour. Preliminary trials indicate that Buddy has some resistance to powdery mildew and crown rot.

For the future, the club has identified two promising June-bearers, EM 1746 and EM 1764; and two everbearers, EMR 470 and EMR 477, now in trials.

In the mainseason variety trial, EM 1746 was included in 2011 along with many other promising EMR selections and a number of named varieties from overseas breeding programmes. EMR’s variety Elegance was the top performer overall in terms of yield, firmness and shelf-life. The Dutch variety Rumbe was the pick of the early selections although its shelf-life was not quite as good as Elsana’s.

As The Full Grower Summaries for projects SF 92a and SF 96 can be found on HDC's website www.hdc.org.uk

PROJECT PROFILE

SF 92a Assessment of new strawberry varieties and selections for commercial UK production
Term: December 2009 to November 2011
Project leader: Chris Creed, ADAS (pictures)
Industry representative: Graham Moore, FAST
Location: GF Busby & Sons, Litywood Farm, Staffordshire

SF 96 Strawberry Breeding Club
Term: June 2008 to May 2013
Project leader: Adam Whitehouse, EMR (pictures)
HDC project co-ordinator: Harriet Duncafe, H&H Duncafe
Location: East Malling Research