



Grower Summary

The Scottish Raspberry Breeding Programme

SF 035b

Annual report 2011

Project Title The Scottish Raspberry Breeding Programme

Project number: SF 35b

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Report: Annual report, November 2011

Previous report Annual report, November 2010

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Date project commenced: 1st April 2009

Date completion due: 31st March 2014

Key words: Breeding, raspberry, cultivar, trials, MAS,
crossing, *Phytophthora*

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures deJHlbed herein and that the report represents a true and accurate record of the results obtained.

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GROWER SUMMARY

Headline

Marker assisted selection has identified 32 selections with the *Phytophthora* resistance marker, which will eliminate undesirable germplasm early in the breeding process and shorten the timescale required to develop new cultivars.

Background and expected deliverables

In 2009, the UK raspberry industry formed a consortium to fund the National Raspberry Breeding Programme for five years. The objective of the programme is to produce improved raspberry cultivars selected for particular markets and cultural practices.

Detailed specifications of the objectives can be found in the revised objectives document. A summary of the expected deliverables from this work will include:

- New potential cultivars suitable for both fresh market production (including season extension through protected cropping) and machine harvesting for processing.
- New hybrids with improved pest and disease resistance, especially to *Phytophthora rubi* (root rot).
- Development of new cultivars will be aided by the deployment of marker assisted selection, developed at JHI, substantially reducing the time required to produce a new cultivar.
- Development of new primocane-fruiting cultivars.
- Evaluation of promising selections under commercial conditions in grower trials.

Summary of the project and main conclusions

JHI Trials

This year the following plots were under evaluation at James Hutton Institute:

- 20 genotypes in a protected site of replicated 5-plant plots (plot J25), in its fourth season.

- 30 genotypes in a protected site of replicated 5-plant plots (plot J26), in its third and final season.
- 30 genotypes in a protected site of replicated 5-plant plots (plot J7), in its second season.
- Approximately 4500 seedlings from the 2008 crossing programme.
- 450 seedlings in pots in a protected site for primocane-fruiting evaluation.

A summary of the characteristics of key selections, including those already identified for on-farm trials are summarised in Table 1.

Table 1. Summary of characteristics of the 'Top 5' JHI selections in 2011

Genotype	Mean yield / stool (g)	Mean fruit size (g)	Mean Brix %	First pick date	Characteristics
0485K-1	2097	5.3	9.4	04/07/2011	Mid-season. Large, conical + glossy fruit consistent quality all season. Popular with visitors. Easy + quick to pick. Has <i>Gene H</i> . A clear winner in 2010 and 2011
0019E2	2310	6.0	9.6	11/07/2011	Late season. Enormous fruit size. Top laterals breaking at node and collapsing
0534RB1	1587	6.3	11.4	07/07/2011	Late season. Enormous fruit size – first pick >8g. Long laterals >1m, but not collapsing
0435D-3*	2833	4.6	10.4	28/06/2011	Very early with a long season, pleasant sweet flavour all season
0447C-5*	2448	6.1	9.3	18/07/2011	Late season 2-3 days earlier than Octavia, vigorous upright cane produced a good 'hedge' large fruit
Glen Ample	1058	4.9	8.9	11/07/2011	Flavour slightly acidic for Ample but typically easy to pick and manage
Tulameen	1075	5.3	11.8	11/07/2011	Good flavour and quality in this plot, fruit a bit too soft
Octavia	441	5.6	9.7	21/07/2011	Very late, had odd ripening problems this year, enormous fruit, pale, tearing collar, good aroma but sharp, bad raspberry beetle damage

*Selections proposed for on-farm trials in 2012

Main Conclusions

- Marker assisted selection has identified 32 genotypes with the marker for Phytophthora root rot resistance early in the breeding process.
- Glen Fyne performed very well in JHI and on-farm trials in the UK and overseas.
- Selection 0019E2 generated tremendous feedback of productive plots of large fruit and good flavour.
- Selection 0485K-1 had outstanding fruit quality in JHI plots and promising early feedback from trials.
- Four new selections 9350F3, 0453C4, 0304F6 and 0433F2 were planted in on-farm trials in the UK and Spain.
- Two new selections were identified for on-farm trials; 0435D-3 and 0447C-5.

- Primocane-fruiting selections were made from crosses made in 2009.

Financial benefits

The release of cultivars with improved fruit quality and yield will result in increased class 1 fruit and increase growers' productivity. New cultivars with pest and disease resistance will lead to a reduction in pesticide applications and the costs associated with these. Reduced use of pesticides will also lessen the risk of residues occurring in harvested fruit. With the possibility of a further loss of agrochemicals as a result of EU-led policy changes, it is essential that the industry has access to resistant germplasm into the future.

Action points for consortia members

- Glen Fyne continues to perform well and commercial propagation should continue.