



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

SF 035b

The UK Raspberry Breeding
Programme

Final 2014

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Further information

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GROWER SUMMARY

Headline

- Sainsbury's and Asda have added Glen Fyne to their approved lists for 2014.

Background and expected deliverables

In 2009, the UK raspberry industry formed a consortium to fund the UK 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 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

Florican trials at JHI

In 2013, the following plots were evaluated at JHI:

- 60 genotypes in a protected site of replicated 5-plant plots (plot M27).
- Approximately 5,500 seedlings from the 2009 and 2010 crossing programmes.
- 700 seedlings in pots in a protected site for primocane-fruiting evaluation from crosses made in 2010 and 2011.
- A summary of the characteristics of key selections, including those already identified for on-farm trials are summarised in Tables 1 and 2. Glen Ample, Tulameen and Octavia are included as controls.

Table 1 Plot J7 (fourth season): Summary of characteristics of key florican selections at JHI

Genotype	Mean yield/ stool (g)	Mean fruit size (g)	Mean Brix %	First pick date	Characteristics
0435D-3*	2,816	4.9	10.5	12 th July	Very early season, popular sweet raspberry flavour with low acidity. Short internode length gives squat habit, making it easy to manage
Glen Ample	2,860	5.7	9.2	19 th July	Very productive in 2013. Good size and firmness, sharp flavour for Ample
Tulameen	1,589	5.1	11.2	19 th July	
0447C-5*	3,008	6.8	10.1	1 st August	Late season. Potential Octavia replacement. Large fruit with meaty texture. Received good feedback from Tescos and Morrisons

Genotype	Mean yield/ stool (g)	Mean fruit size (g)	Mean Brix %	First pick date	Characteristics
Octavia	-	-	-	-	All plants died from root rot in 2012

*Selections currently identified for on-farm trials

Table 2 Plot M27 (second season): Summary of characteristics of key floricanes selections at JHI

Genotype	Mean yield/ stool (g)	Mean fruit size (g)	Mean Brix %	First pick date	Characteristics
0433F2	2,816	4.2	10.5	12 th July	Early season, good sweet flavour, low acidity, less soft than in previous years
Glen Ericht	3,569	4.8	9.6	12 th July	Crown gall symptoms on floricanes but still productive, acidic
Glen Fyne	3,877	5.4	10.2	12 th July	Good quality and flavour all season, very productive
Glen Ample	4,751	5.7	9.2	15 th July	Best yield and size for several years, flavour relatively poor – acidic
0485K-1	2,871	5.5	10.9	19 th July	Sweet with a good balance of acidity, popular with visitors
0658E-1*	3,661	6.5	8.4	19 th July	Large fruit, easy to pick, nice habit – upright, some split fruit early in the season but good quality and excellent shelf-life in the main pick
0019E2*	3,612	6.3	10.2	22 nd July	Mid-late season. Large fruit, good flavour, continuing concern over weak laterals
0658C5	5,265	7.9	9.0	22 nd July	Enormous fruit, first pick 12g berries, didn't drop below 6g all season - most productive in 2012 and 2013, excellent shelf-life, some raspberry leaf and bud mite symptoms
Glen Doll	2,580	4.5	10.3	22 nd July	Large size for Glen Doll, consistent pick, easy to manage, sweet fruit, dry with a good shelf-life
0550E4*	4,274	5.1	11.3	25 th July	Sweet all season, long strong laterals, gene H, good shelf-life
Octavia	2,643	6.3	8.7	1 st August	Late, very large fruit, acidic flavour but ok, some raspberry leaf and bud mite symptoms, healthy plot.

*New selections proposed for on-farm trials in 2014

Primocane trials

Approximately 700 seedlings were evaluated for primocane-fruiting habit and quality during the 2013 season. These single plant plots are from crosses made in 2010 and 2011, a combination of primocane x floricane and primocane x primocane families. These were initially screened for absence of spines and aphid resistance prior to moving into a polytunnel in 10L pots.

- The earliest selections began fruiting in late August, with the late types still flowering into October.
- The primocane pedigree of the families includes; Autumn Treasure, Erika, Brice, Amira and various open pollinated (OP) seed.
- Several selections were identified with large fruit, good quality and ease of picking (see Table 3). Brix and initial fruit size were recorded. Yield isn't recorded at this stage.
- Eight selections identified in 2012 were assessed in 5-pot plots.
- Five selections were identified for trialling in 2014.

Table 3 Primocane selections at JHI in 2013

Selection	Parents			First Fruit	Initial Fruit size (g)	Brix°	Notes
1014F1	0704F5	X	Polka	14/8/13	5.7	11.2	Open field plot, early, firm, conical and bright, flavour ok but lacks juice
1132F-12*	0462C-1	X	Autumn Treasure	13/9/13	7.4	10.6	Firm, good colour, good shelf life but less glossy than other selections
1012C15	0704F5	X	Autumn Treasure	13/9/13	6.3	10.8	Early, long season, a few split fruit
Autumn Treasure				17/9/13	6.5	10.2	Usually best control but plants poor in 2013
Erika				17/9/13	7.4	9.8	Slightly rough quality, nice flavour early on, a few split fruit
0925B8	0304F6	X	Autumn Treasure	26/9/13	6.1	10.2	Selected in 2012, earliest of these selections, pale meaty fruit, nice flavour early in season
1132F16*	0462C-1	X	Autumn Treasure	26/9/13	8.2	9.9	Large, attractive, firm
1132E2	0462C-1	X	Autumn Treasure	26/9/13	6.0	10.1	Floral flavour, attractive, longer laterals, small size?
1104D-11	Brice	X	Autumn Treasure	26/9/13	8.2	9.4	Easy to pick, very firm but darkens quickly
0919D-7	9767RA3	X	Autumn	30/9/13	6.6	10.9	Selected 2012, nice flavour, glossy fruit but

Selection	Parents			First Fruit	Initial Fruit size (g)	Brix°	Notes
			Treasure				darkens slightly in punnet
1103K1*	Autumn Treasure	X	Glen Lyon	30/9/13	6.4	9.7	Sweet but little acid, shiny fruit, attractive
1115I-7*	0485K-1	X	Autumn Treasure	1/10/13	8.2	9.4	Late, large, bright, conical, firm, floral flavour, longer laterals
1116I1	0485K-1	X	Brice	3/10/13	7.8	9.2	Late, good colour, glossy fruit, easy to pick, a few split fruit
1116H1*	0485K-1	x	Brice	3/10/13	7.6	9.8	Liked at UKRBC meeting, attractive with a good flavour

*Recommended for trials in 2014

Main conclusions

- Glen Fyne performed exceptionally well and has been accepted on to the approved lists of Sainsbury's and Asda, but not Tesco.
- Four selections were sampled into multiple retailers during the 2013 season and produced mixed results from each supermarket. This exercise will be repeated in 2014.
- Late selection 0447C-5, a potential replacement for Octavia, performed well for a third season in a row and feedback from retailers sampling reports were promising.
- Four selections (9350F3, 0453C4, 0304F6 and 0433F2) were planted in trials in spring/summer 2011 and produced a crop in 2013. From these results and previous results from JHI the following was observed:
 - 0433F2 is soft compared with controls.
 - 0453C4 has a small fruit size compared with controls.
 - 0304F6 was productive and firm but had poor flavour.
 - 9350F3 performed well in Spain but less well in UK sites.
- Plants of selections 0435D-3 and 0447C-5, identified for on-farm trials in 2011 were planted on several sites in the UK and Europe in 2013 to produce a baby crop in 2014.

Action points for consortia members

- Plant new selection 0658C5 into on-farm trials.
- Prepare commercial release strategy for 0447C-5 and 0435D-3.