Variety trials Factsheet 08/16

Soft Fruit

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Raspberry variety trials – summer and primocane fruiting selections at JHI in 2015

The raspberry breeding programme, based at the James Hutton Institute (JHI), is currently funded by a Raspberry Breeding Consortium, consisting of support from AHDB, the Scottish Government and 20 industry partners from within the EU. The objective of this five year project is to produce new summer and primocane-fruiting raspberry varieties for the European industry for both the fresh and processing markets, whilst deploying marker assisted selection to promptly identify important commercial traits.

Fresh market trial plots at JHI in 2015

In 2015, after a mild winter and a lengthy cold spell from spring to early summer, the breeding plots began picking two weeks later than in 2014. Low light levels during a wet July diminished fruit quality during the early part of the season. Poor bud break and odd flowering patterns were seen across a range of genotypes. Despite the poor season, the promising selections performed well compared to the controls and other genotypes. At JHI, the breeding trials were assessed under a Spanish-style tunnel. Two replicates of five-plant plots of each selection were picked and recorded for yield, fruit size and quality characteristics. The floricane selections were compared to the standard varieties; Glen Ample, Tulameen and Octavia. Mean data of fruit size and Brix^{o} can be found in Tables 1 and 2 and yield is presented in Figure 1 (all overleaf).

New cultivar Glen Dee*

Glen Dee, a new floricane named in 2014, was evaluated in large scale commercial trials in 2015. Glen Dee, tested as 0447C-5, begins fruiting 7 days later than Glen Ample and 3-5 days earlier than Octavia in trials in Scotland. Productivity and fruit size are good, flavour is described as fruity and sweet with a balance of acid and a creamy texture. Shelf-life is exceptional, maintaining a pale colour and uniform appearance after 10 days in storage. Glen Dee is a good growing cultivar with easy to manage cane but can be very vigorous in Southern England. Glen Dee is not resistant to *Phytophthora* but root vigour is high and appears to have more tolerance than Ample. Triallists have described Glen Dee as earlier than expected but is a productive variety with large, good quality fruit.

Characteristics of the most promising floricane selections

Two outstanding floricane selections have been identified by the UK Raspberry Breeding Consortium. These genotypes have been planted on several sites since 2013 around the UK and Europe.

0485K-1* This early to mid-season, glossy selection stood out during the poor conditions of 2015, scoring highest for flavour and appearance in a blind tasting at the Fruit for the Future event at JHI for three successive seasons. It has proved popular with many visitors since 2010 due to a sweet sherbet flavour with low acidity. JHL applied for Plant Variety Rights for 0485K-1 in 2015.

0658C5** Since identification for trials in November 2012, 0658C5 has been both the largest and most productive genotype in JHI breeding trials. Plants were sent for trials around the UK and fruit will be assessed in 2016.

New floricane trials in 2015, focusing on flavour, large fruit size and shelf-life

0658E-1** An early-mid season sister of the huge-fruited 0658C5, 0658E-1 has superior flavour and appearance. Flavour is described as sweet and aromatic with elderflower notes. On-farm trials were planted in spring 2015, with an initial crop expected in 2016.

0925C-2 A new, early season selection with very large fruit was identified for trials after several productive seasons in a plot infested with *Phytophthora* root rot. Plants will be available to trial in 2017.

Several of the floricane genotypes described above, including Glen Dee, are established in the AHDB raspberry variety trial (SF41d), as replicated main* or guard entries and will be fruiting in 2016.**

Marker assisted selection for resistance to *Phytophthora* root rot at JHI

The *Rub118b* molecular marker linked to root rot resistance is now used routinely in the programme to identify resistant germplasm early in the breeding process. 30 floricane selections with this marker were cropping in field plots at JHI in 2015 and assessments were made for yield and fruit quality. All of these selections were distinctive for root vigour and primocane growth but two of these selections stood out with high productivity and fruit quality. Plants will be available for on-farm trials in 2016:

0946/12 A productive selection with a good shelf-life. Fruit is bright with a fruity flavour. Laterals display fruit well for picking.

0957/58 Best flavour of the marker selections. Fruit is smaller but has good shelf-life. Vigorous spawn but upright and easy to manage.

The Diagnostics Unit, at JHL, has identified >250 new selections with the root rot marker from the next generation of crosses. These combine resistance with both floricane and primocane types and will be assessed for fruit quality in 2016.
New markers to select for genotypes with improved shelf-life (developed under HortLINK funding, HL0195) will be validated and deployed in 2016.

Breeding for primocane types

Breeding for primocane types focuses on early autumn season with high fruit quality and significant improvements could be seen in the JHI primocane germplasm in 2015. 24 early-stage selections were assessed in glasshouse trials in Norfolk in 2015 to assess seasonality and yield. A summary of fruit quality of the most promising of these genotypes can be found in Table 3 (over). Plants from the first JHI primocane selections will be available to trial in 2016.

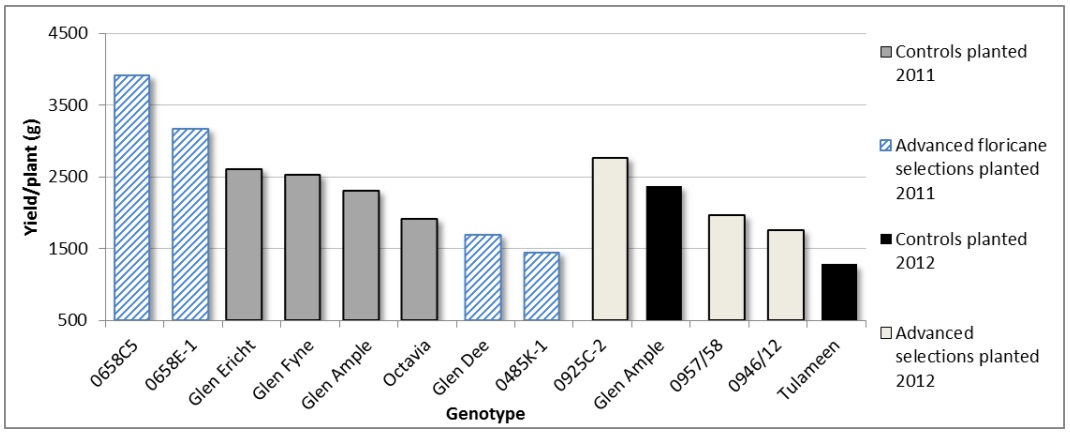
Table 1 Fruit data in JHI plots, planted 2011

	Glen Dee	0485K-1	0658C5	0658E-1	Glen Ample	Octavia
Mean fruit size (g)	5.4	5.4	6.7	6.7	5.4	5.6
Mean Brix°	10.8	10.4	9.5	9.8	9.5	8.6
First pick date	27 July	27 July	20 July	20 July	20 July	29 July

Table 2 Selections with the marker for root rot resistance: Fruit data in JHI plots, planted 2012

	0925C-2	0946/12	0957/58	Glen Ample	Tulameen
Mean fruit size (g)	6.1	4.3	3.7	5.6	4.8
Mean Brix°	9.5	8.1	6.7	9.4	10.7

Figure 1 Summary of yield recorded from key selections on two sites at JHI.



All genotypes described are spinefree and have gene $A_{10,}$ conferring resistance to four biotypes of the large raspberry aphid (*Amphorophora idaei*). All selections are available to trial under a Trialling and Testing agreement from James Hutton Ltd.

Table 3 Primocane selections at JHI in 2015

Selection	First Fruit	Initial Fruit size (g)	Brix°	Notes
1132F-12	23 September	6.0	8.9	Sweet and fruity, pale colour, easy to pick
1116H1	23 September	6.4	10.9	Attractive round fruit, floral flavour, pretty, glossy, easy picked
1249K-7	1 October	6.7	9.8	Very large, bright, firm and glossy, easy picked, low acidity with a sherbet flavour
Imara	23 September	6.2	9.8	Very early, very difficult to pick, initially sweet but loses flavour quickly
Polka	6 October	5.3	11.3	Early, best flavour of the named cultivars, soft, difficult to pick