



¹HortResearch, P.O. Box 220, Motueka, Nelson, NEW ZEALAND.
²HortResearch, Private Bag 11 030, Palmerston North, NEW ZEALAND.
³HortResearch, P.O. Box 51, Lincoln, Canterbury, NEW ZEALAND.
 E-mail: jstanley@hortresearch.co.nz Fax: +64 (0)3 528-9106

Boysenberry - a Character Description for Commerce

Introduction

Boysenberry (Boysen) has a very distinctive flavour, colour and volatile aroma that differentiates it from other *Rubus* berries. A description of Boysen would assist with:

- Verification and detection of adulterations in Boysen products;
- The establishment of boundaries to define new Boysen cultivars within breeding programmes.

Three different methods were investigated to distinguish Boysen from other *Rubus* fruit.

Materials and methods

The following methods to test differentiation amongst *Rubus* berry types:

1. Anthocyanin Pigment Analysis

Juice from Boysen and other *Rubus* fruits was analysed for anthocyanins using HPLC.

2. Test Panel “Sniff Test”

Defrosted berry samples were placed in coded, sealed jars and “sniffed” by a panel of growers and researchers who recorded similarity to Boysen.

3. Volatile Analysis

Headspace analysis was used to analyse the juice samples. Volatiles and standards of known compounds were separated and identified by GCMS.

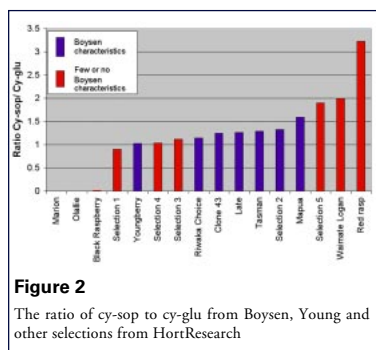


Figure 2
 The ratio of cy-sop to cy-glu from Boysen, Young and other selections from HortResearch

Results

1. Anthocyanin Pigment Analysis

- The cyanidin 3-sophoroside (cy-sop) to cyanidin 3-glucoside (cy-glu) ratio appeared to distinguish Boysen in most cases (Fig. 1)
- Pigments detected from Boysen/Young samples were cy-sop, cyanidin 3-rutinoside-5-glucoside (cy-glurut), cy-glu and cyanidin 3-rutinoside (cy-rut) (Fig. 2).

2. Test Panel “Sniff Test”

- Over 70% of the panel identified Boysen/Young and selections similar to Boysen (Table 1).

3. Volatile Analysis

- High levels of linalool were associated with Young, Logan and Boysen but ethyl 2-butenolate with Boysen and other selections (Fig. 3).
- No volatiles unique to Boysen were identified (Fig. 3).

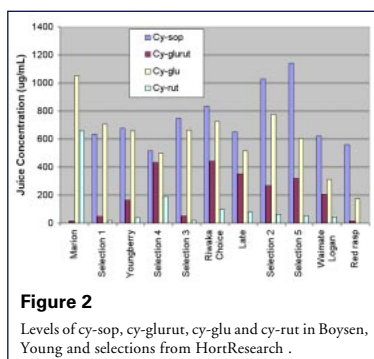


Figure 2
 Levels of cy-sop, cy-glurut, cy-glu and cy-rut in Boysen, Young and selections from HortResearch .

Conclusions

The following criteria: could provide a workable definition of Boysen:

- Contains levels of cy-sop over 550mg/mL; cy-glurut over 100mg /mL; cy-glu over 350mg /mL and cy-rut over 0mg /mL;
- A cy-sop/ cy-glu ratio of between 0.9 and 2.0;
- 70% of a panel identifies the aroma as “Boysen”;
- A similar volatiles profile to Boysen.

As yet the total characterisation of Boysen is incomplete. Further studies that could be of value.

Table 1:

Proportion of Panellists who Identified a Selection/ Cultivar as having a “Boysen” Aroma.

Cultivar/Selection and Relatedness to Boysen	Percentage identified as “Boysen”
“Early”: (Young)	72
“Late”: Boysen	86
Selection 1: Unlike Boysen background	14
Selection 2: Like Boysen background	86
Selection 3: Unlike Boysen background	14
Selection 4: No Boysen background	0
Selection 5: Unlike Boysen background	43

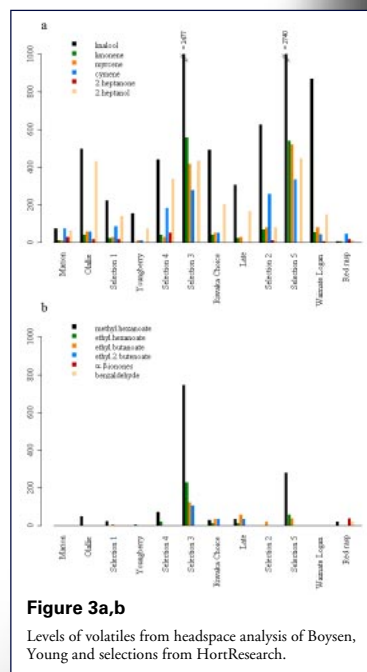


Figure 3a,b
 Levels of volatiles from headspace analysis of Boysen, Young and selections from HortResearch.

