

Economic Commission for Europe
Committee on Trade
Working Party on Agricultural Quality Standards
Specialized Section on Standardization of Fresh Fruit and Vegetables
Sixty-second session
Geneva, 28th April – 1st May 2014
Item II.3. b) of the provisional agenda
Revision of UNECE standards

New Zealand Proposal for Miniature Apples

Prepared by the Ministry for Primary Industries
in consultation with
Pipfruit New Zealand Inc and their stakeholders

Contents:

- 1. Introduction**
- 2. Technical information (unique characteristics of miniature apples)**
- 3. Trade support for a derogation in support of miniature apples**
- 4. Proposed solution**

Appendix 1. Starch Pattern Index

Appendix 2. Copy of “World Apple and Pear Association” (WAPA) letter supporting the need for a derogation for miniature apples varieties.

Appendix 3. Copy of the Southern Hemisphere Association of Fresh Fruit Exporters” (SHAFFE) letter supporting the need for a derogation for miniature apple varieties.

1. Introduction:

Miniature apples are a fairly recent addition to the many other miniature fruit and vegetables introduced to the commercial market place in recent years.

These miniature apples consist of specific varieties which are different from the more classical varieties already available on the commercial marketing scene and listed in the UN/ECE standard.

The aim of this paper is to:

- (i) Provide UN/ECE membership with technical and Trade information in support of the unique characteristics relating to miniature apple varieties.
- (ii) Seek to have these unique miniature apple varieties accepted for commercial marketing.
- (iii) Acceptance of a derogation from the basic apple standard for the following characteristic parameters of miniature apples:
 - having a minimum brix of 12%
 - exclusion from fruit sizing provisions (including the provisions for size tolerances).

2. Technical information (unique characteristics of miniature apples)

2.1 Harvest and Maturity Characteristics of the variety T96 (Rockit™)

Introduction:

Rockit™ is an apple variety that has been developed especially for the premium snack food market. It is a genetically small, blush red uniform shaped fruit with unique texture of firm melting flesh, high aroma, and sweet low acid flavour. Average fruit size at harvest is approximately 50 mm.

Thanks to its unique characteristics, Rockit™ retail packs (tubes containing five-six apples) are already selling well in high-end convenience stores in Asia, the US and Great Britain. Rockit™ apples are naturally smaller than most other apples and have exceptional eating and storage qualities.

The production and marketing of Rockit™ apples is controlled under license and Rockit™ apples are not sold alongside traditional apple varieties in the fresh produce section of retail stores.

The photograph in Figure 1 shows trees grafted with Rockit™ in the winter of 2001 bearing their March 2014 crop close to harvest.



Figure 1: Rockit™ trees grafted in winter 2012 showing their 2014 crop close to harvest.

Technical information relating to the variety Rockit™: Maturity

The data in Table 1 below summarises the maturity progression of a mature block of Rockit™ apples during the 2013-14 growing season. Fruit maturity samples were collected at weekly intervals starting approximately two weeks prior to the anticipated harvest date.

The Starch Pattern Index (SPI) was assessed using the standard 0 – 7 point scale ‘Starch Pattern for Apples’ chart used by the New Zealand apple industry (refer Appendix 1. for more information about Starch Pattern testing).

Flesh Firmness (Pressure) is reported using a Willowbank Electronic Penetrometer.

Harvest began in the block portrayed above on the 5th of March 2014.

Table 1:

Date	Starch Pattern Index	Pressure kg/f	Brix (% Soluble Solids)	% Blush	% Dry Matter
20/02/2014	2.3	8.5	12.2	---	15.2
24/02/2014	3.1	8.2	12.6	69.5	---
3/03/2014	4.5	7.7	12.8	78	---
10/03/2014	5.2	7.3	13	87.8	---
17/03/2014	5.9	7.1	13	89.3	---

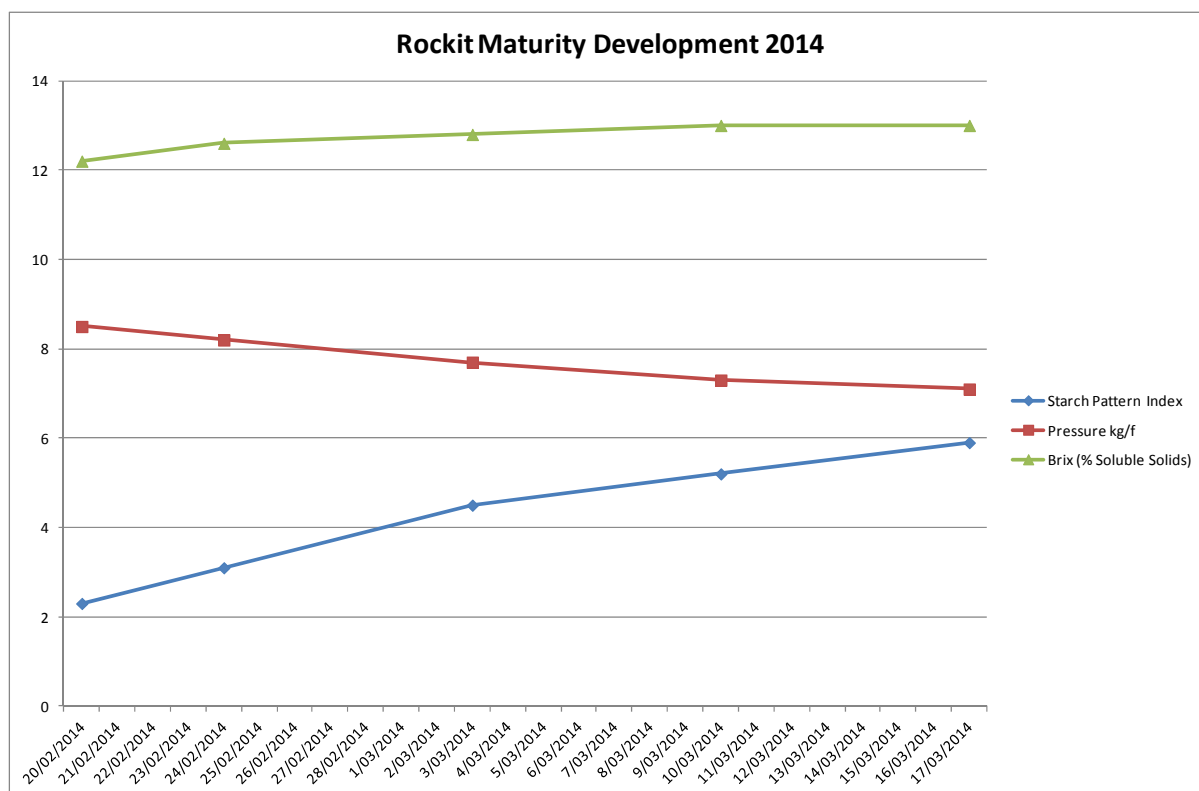


Figure 2: Graphically illustrates the maturity progression of a mature block of Rockit™ apples prior to and during the 2014 harvest.

Fruit size data ;

Fruit size data has been collected in New Zealand since 1999 by HortResearch and since then monitoring has continued to demonstrate that Rockit™ average fruit size is substantially smaller at full maturity than traditional apple varieties.

At the time of writing the 2014 Rockit™ harvest was still under way and packing of Rockit™ had only just begun so fruit size and distribution data for the 2014 season was not available for this report.



Figures 3 & 4: Rockit retail packs showing branding and typical fruit size

Figures 5 and 6 below show Rockit™ average fruit weight and Rockit™ seasonal fruit growth curves in comparison to some traditional apple varieties during the 2012 & 2013 harvest seasons.

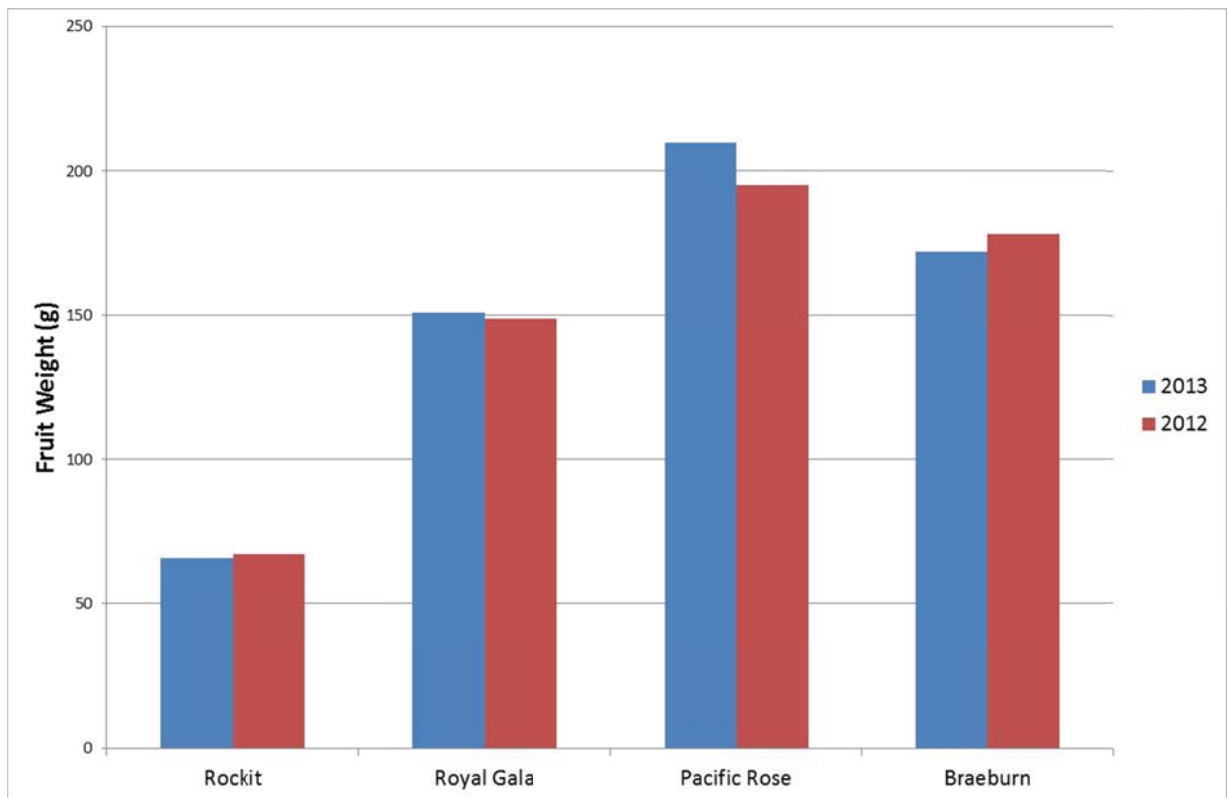


Figure 5: Average fruit weight at harvest of Rockit™ compared with Royal Gala a medium small fruit size apple variety, Pacific Rose™ a large size apple variety and Braeburn a medium large fruit size apple.

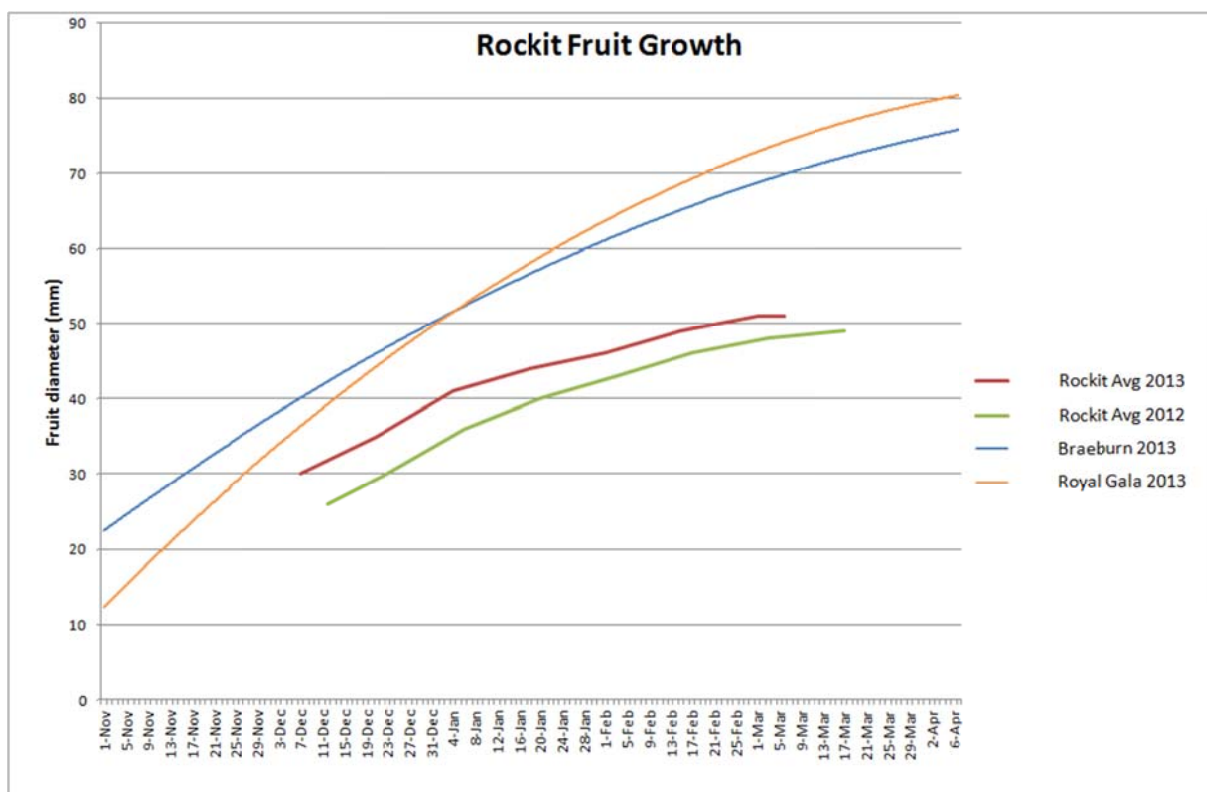


Figure 6: Fruit growth curves for Rockit™, Braeburn and Royal Gala (Hawkes Bay, NZ). Rockit™ diameter increases at approximately half the rate of normal varieties after the end of the cell division period.

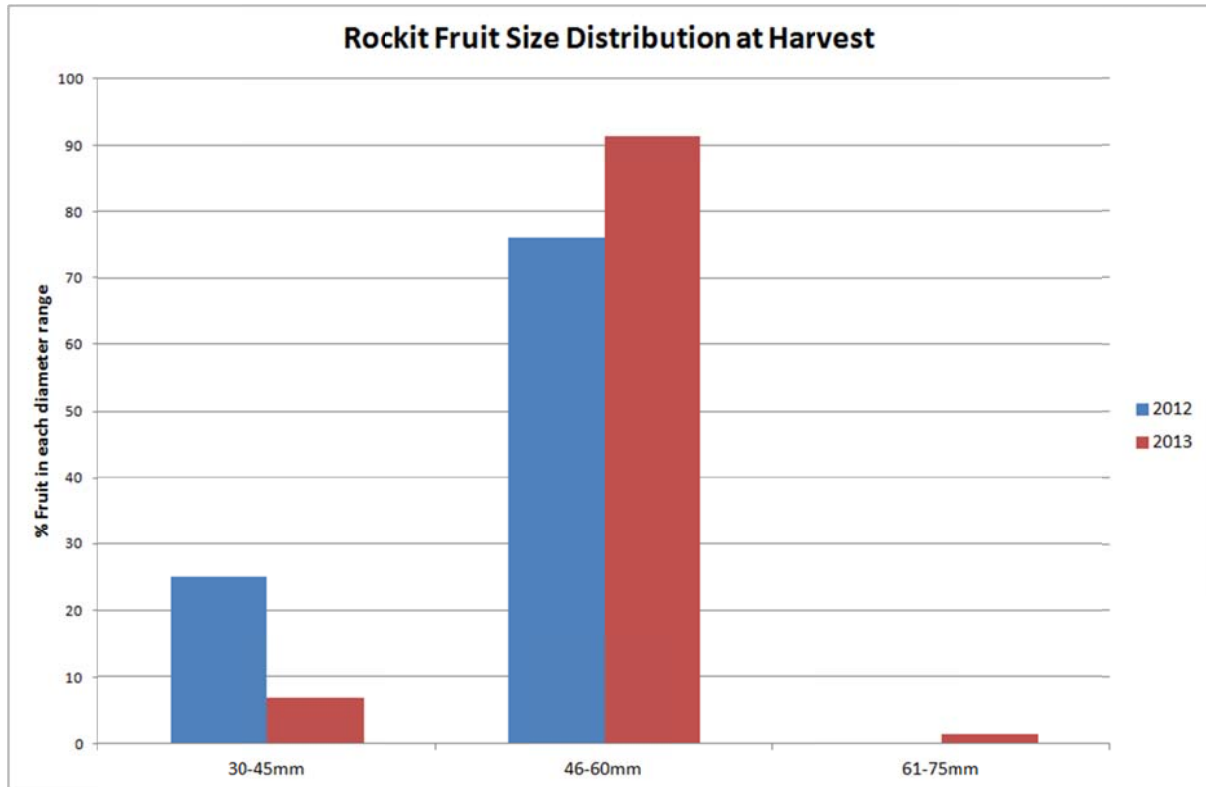


Figure 7: Rockit™ fruit size distribution at harvest expressed in millimetre size bands.

2013 crop was affected by frost. Hence the crop load was very light resulting in larger average fruit size than would have been expected for a normal crop load. The 2012 fruit size distribution indicates what we would normally expect the fruit size distribution of Rockit™ to be.

Fruit dry matter

Fruit dry matter (DM) measurement provides a guide to how an apple will taste and can also give an indication of how well the fruit will store. Higher dry matter is normally associated with better taste and improved storage performance.

Rockit™ has consistently produced fruit with superior dry matter content compared to traditional apple varieties.

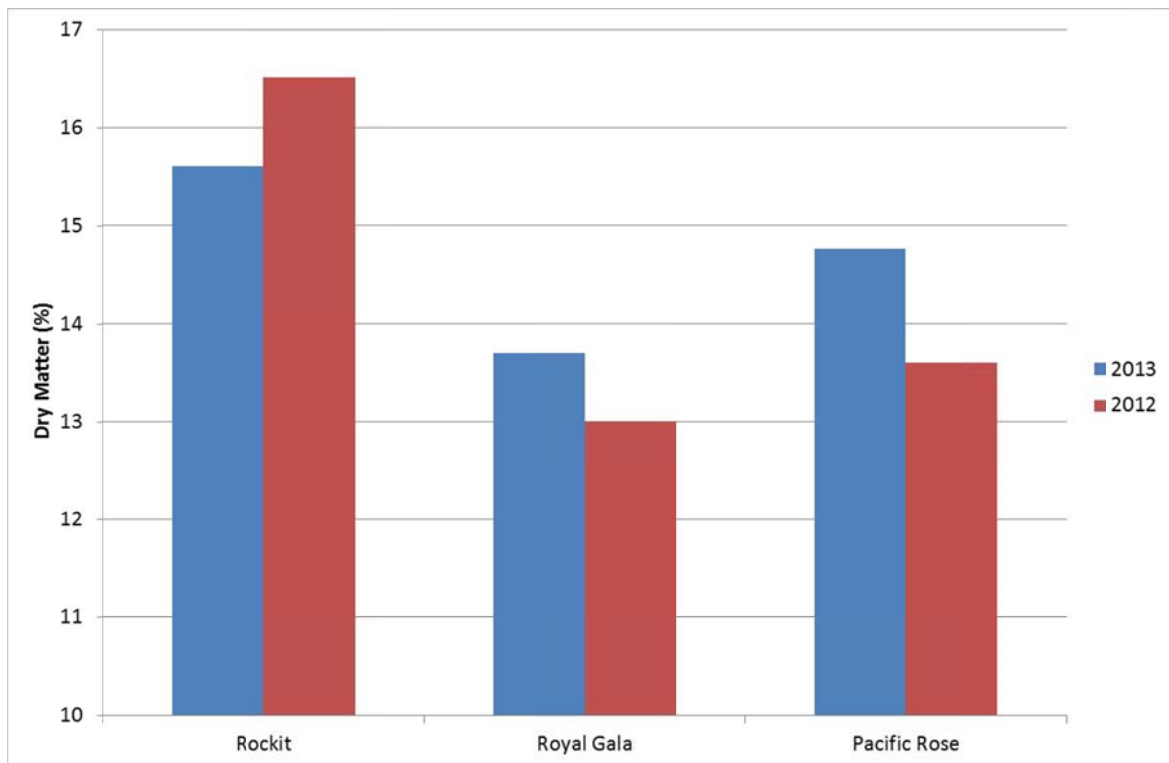


Figure 8: Fruit dry matter comparison at harvest compared to other varieties Rockit™ has high dry matter.

Storage performance

After storage for 12 weeks fruit retain a firm texture, high soluble solids and low acidity indicating a high internal quality with a sweet flavour balance. (HortResearch 2005).

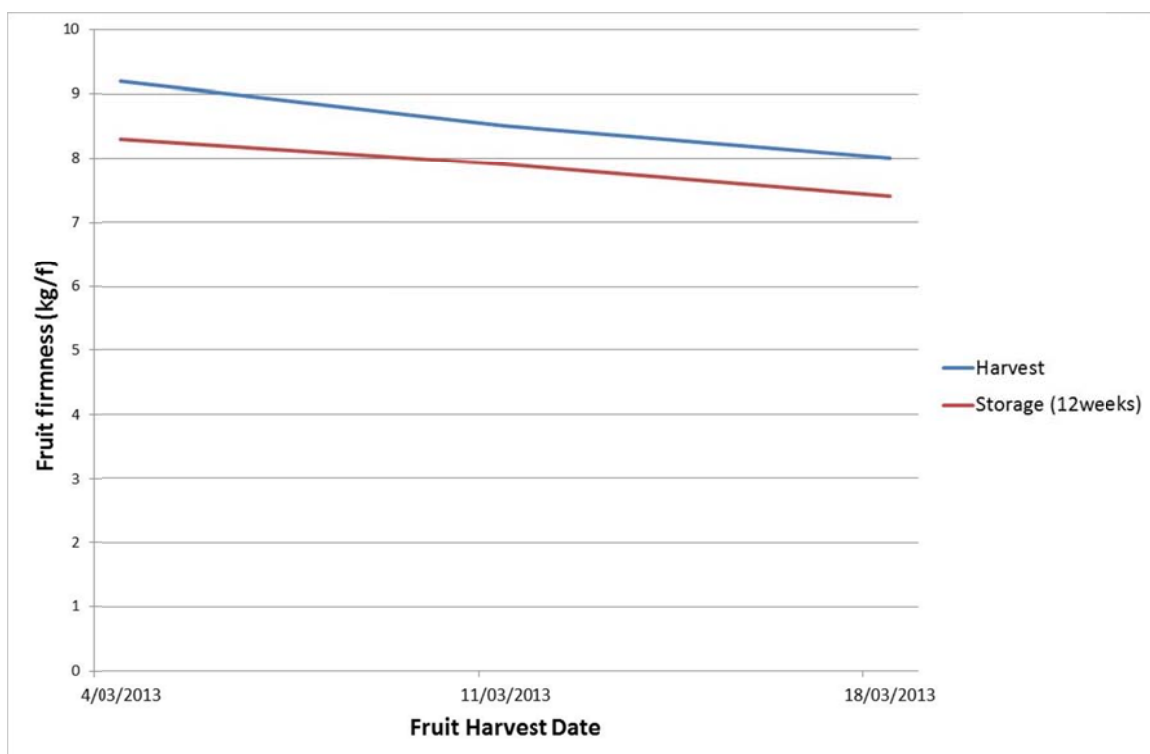


Figure 9: Fruit firmness measured at three harvest dates and the corresponding fruit firmness after 12 weeks in cool storage. Rockit™ holds its fruit pressure well, both on the tree through harvest and later in cool storage.

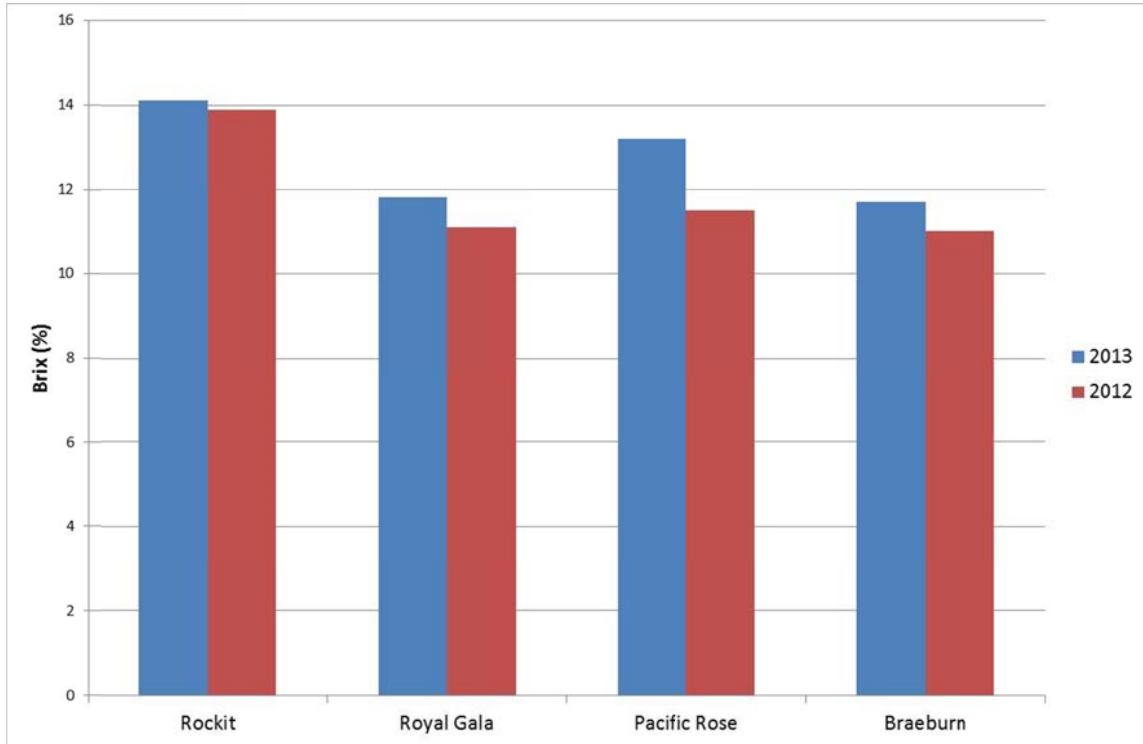


Figure 10: Comparison of average fruit brix (soluble solids) at harvest. Rockit™ has consistently high brix which along with its firm flesh makes it a good eating experience.

PVR Registration Characteristics of the Variety T96 (Rockit™)

Apple (*Malus domestica*)

Variety: T96

Synonym: N/A

Breeder's Code: A115R02T096

Trade Reference: Rockit

Other Reference: N/A

Application no: 2012/282

Current status: ACCEPTED

Certificate no: N/A

Received: 11-Dec-2012

Refused: N/A

Accepted: 01-Feb-2013

Withdrawn: N/A

Granted: N/A

Terminated: N/A

Description published in Plant Varieties Journal: Volume N/A, Issue N/A

Title Holder: Prevar Ltd

Genetic Resource Centre 1: JFT Nurseries Monbulk-Seville Road Monbulk VIC 3793

Genetic Resource Centre 2: N/A

Agent: Australian Nurserymen's Fruit Improvement company (ANFIC) Ltd

Date of effect: 14-May-2013

2.2 Characteristics of the Variety TCL 44 (Tiddly Pomme™):



Variety Code TCL 44

Parentage: Natural mutation of Royal Gala.

Colour: Stripe over pale lemon background

Size: Tiny peak count 320

Shape: Identical to Royal Gala.

Flesh: Crisp light and juicy

Flavour: Mild sweet acid.

Harvest window: 3rd week Feb mid March.

Storage: Good as for Royal Gala.

Visual appearance: 4.

Flavour and eating quality: 4

Population:

One mother tree 25yrs old,

501st generation trees 6yrs old.

150 2nd generation trees 5yrs old

3. Trade support for a derogation in support of miniature apples

Both the “World Apple and Pear Association” (WAPA) and the “Southern Hemisphere Association of Fresh Fruit Exporters” (SHAFFE) support this proposal for a derogation. Copies of their letters of support are attached as Appendix 2 and 3.

4. Proposed solution:

1. Adding the highlighted sentence below to the provisions concerning sizing.

III. Provisions concerning sizing

Size is determined either by the maximum diameter of the equatorial section or by weight.

The minimum size shall be 60 mm, if measured by diameter, or 90 g, if measured by weight. Fruit of smaller sizes may be accepted if the Brix level of the produce is equal to or greater than 10.5° Brix and the size is not smaller than 50 mm or 70 g.

“Miniature apples, listed in the variety list in the Annex, are excluded from the provisions concerning sizing. These miniature apples must have a minimum of 12.0° Brix.”

To ensure uniformity in size, the range in size between produce in the same package shall not exceed⁴:

2. Adding the highlighted column to the “Non-Exhaustive List of Apple Varieties Providing a Classification on Colouring and Russeting of the UNECE Standard for Apples Annex and including the two varieties.
ANNEX

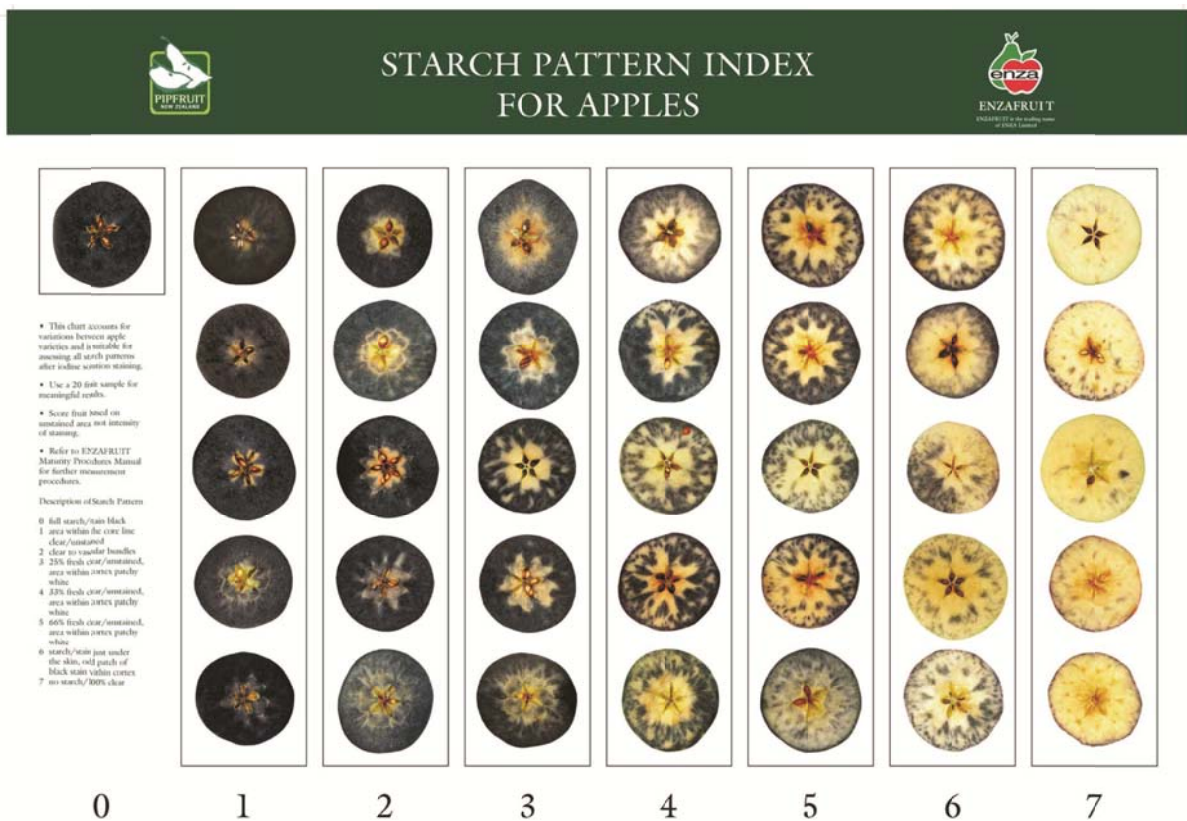
Variety	Mutant	Synonyms	Trademarks	Colour Group	Russeting	Miniature Variety
T96			Rockit™	C		Yes
TCL44			Tiddly Pomme™	C		Yes

Appendix 1.

Starch Pattern Index

The measurement of Starch Pattern Index is used worldwide as a measure of apple fruit maturity. The test is based on the fact that starch stains black when iodine is sprayed onto cut fruit. As apple fruit mature starch is converted to sugar and the area of the cut fruit that stains black reduces. Comparing the pattern of staining with a reference chart allows the maturity development of fruit to be monitored.

The chart below was used as the reference to monitor the Starch Pattern Index progression in Rockit. Fruit with an index value of '0' are showing no conversion of starch to sugar and are immature while fruit with an index value of '7' have converted almost all of their starch to sugar and are generally considered overmature.



Appendix 2.

Copy of “World Apple and Pear Association” (WAPA) letter supporting the need for a derogation for miniature apples varieties.

Mr Serguei Malanitchev
Agricultural Quality Standards
UNECE Trade and Timber Division
Geneva
Switzerland

UNECE – Miniature Apples

Dear Serguei,

Following our letter of early January on the issue of apples’ list of varieties, and in view of the upcoming meeting of the working party on the Specialised Section on Standardisation of Fresh Fruit and Vegetables of the UNECE, the membership of WAPA would like to raise your attention on this particular issue.

Miniature apples

You might be aware that in recent months the first miniature apples have been made available on the market. This is a new development which has to date received a very positive response within the trade and from consumers. This is an innovative niche market, highly priced. These miniature apples varieties could also help the sector to develop a new healthy snack segment in supermarkets by being e.g. displayed at check-out, competing as healthy snacks with other energy bars. Besides, these varieties might help in motivating children and younger generations to build up consumption as they will become the future consumers of normal sized varieties.

This development of small apples is not unique. In the fruit and vegetables sector, many other miniature varieties were also introduced on the market in recent years. The miniature apples are specific varieties, different than the classical varieties already listed in the UN/ECE standards.

These varieties are usually not larger than a golf ball and therefore do not meet the minimum requirements of 50 mm of the marketing standards. Despite their small size, these specific varieties have reached their maturity and generally have brix level over 12%.

For the time being, two main innovative miniature apples have been introduced, namely the Tiddly Pomme and the Rockit (TM).

WAPA members are supportive of innovation that could enhance consumption and therefore call UNECE to recognise miniature apples in its marketing standards based on a number of parameters identified as follows:

- a positive section for miniature varieties, as a derogation in the basic standard, should be set in the annex of the UNECE standards (WAPA would assist in identifying those varieties);

- miniature varieties should have minimum brix of 12%;
- no maximum size needs to be considered;

There are different perspectives among the WAPA membership in regard to other parameters such as the benefit or not to set minimum size. WAPA leaves it to UNECE to decide if appropriate or not.

We hope the input provided by WAPA will be taken into consideration in the upcoming discussion of the Specialised Section on Standardisation of Fresh Fruit and Vegetables of the UNECE.

We remain available for further information,

Yours sincerely,

Philippe Binard
Secretary General

WORLD APPLE AND PEAR ASSOCIATION Rue des Trèves 49-51 bte 8 • 1040 Brussels • Belgium • Tel : +32 2 777 15 80 • Fax : +32 2 777 15 81 • e-mail : info@wapa-association.org www.wapa-association.org

Appendix 3.

Copy of the Southern Hemisphere Association of Fresh Fruit Exporters” (SHAFFE) letter supporting the need for a derogation for miniature apple varieties.

Brussels, 11 April 2014

Mr. Serguei Malanitchev

Agricultural Quality Standards

UNECE Trade and Timber Division

Geneva

Switzerland

UNECE – Miniature Apples

Dear Serguei,

SHAFFE represents the fresh fruit exporters from the Southern Hemisphere, namely Argentina Australia, Brazil, Chile, New Zealand, Peru, South Africa and Uruguay.

We are aware that the above mentioned issue has been raised by WAPA (the World Apple and Pear Association) and will be on the agenda of the upcoming meeting of the working party on the Specialised Section on Standardisation of Fresh Fruit and Vegetables of the UNECE at the end of this month.

The membership of SHAFFE supports the benefit of a specific identification of these miniature varieties within the UN/ECE standards. SHAFFE considers that it is important to set a minimum brix level of 12 degree to secure that these specifically identified small size varieties have reached their maturity. Nevertheless, among the SHAFFE membership, we consider that beyond this criteria, there is no need to set other parameters and in particular no need to specify maximum or minimum sizes.

We hope the input provided by SHAFFE will be taken into consideration in the discussions.

We remain available for further information,

Yours sincerely,

Philippe Binard

Secretary General

SHAFFE