

Brixmaster Evaluation

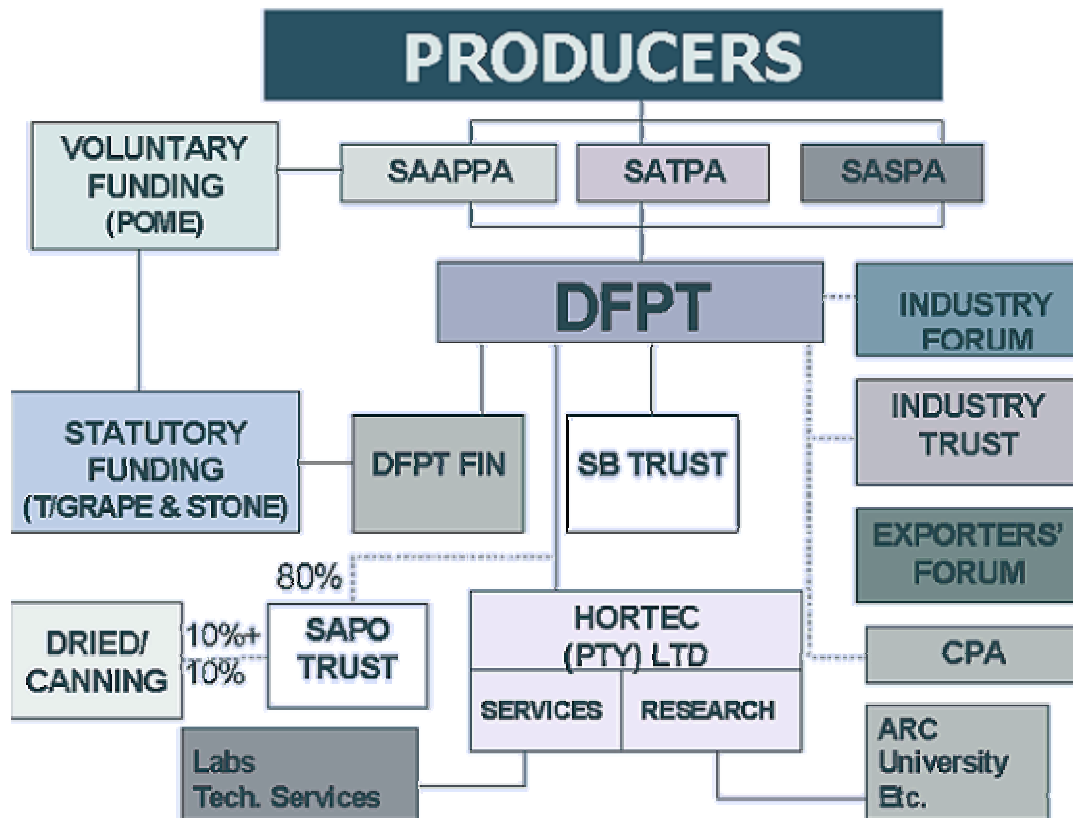
The following evaluation of the Brixmaster was done by Hortec (PTY) LTD over four months.

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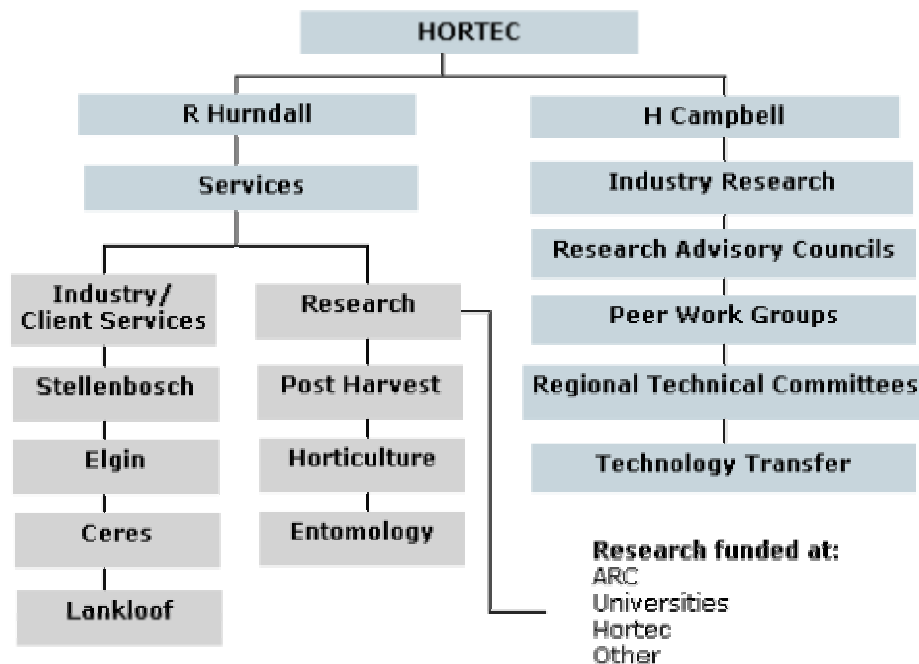
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Hortec

Hortec is a subsidiary of the Deciduous Fruit Producers' Trust (DFPT). The DFPT is a producer organisation controlled by the SA Apple and Pear Producers' Association, the SA Stone Fruit Producers' Association and the SA Table Grape Producers' Association. Hortec is an independent company with its own board of directors. Hortec provides quality management and decision-support services to producers, consultants, exporters and importers of deciduous fruit and citrus.



Hortec comprises Services and Research Divisions. The Services Division conducts industry and client (user-pay) services from its facilities in Stellenbosch, Elgin, Ceres and Langkloof. The Services Division conducts its own in-house research in the fields of Post Harvest (storage quality of new cultivars), Horticulture (fruit growth curves and fruit-size prediction modelling) and Entomology (codling moth resistance management). The Research Division manages industry research and funds research projects at the Agricultural Research Council, Universities, Hortec Services and other research organisations.





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1. Introduction

Sugar content (Total Soluble Solids (TSS)) is one of the most important parameters to give an indication of the maturity of table grapes. Grapes that are destined for export need to comply with the export standards where TSS is one of the most important quality parameters. The Brixmaster was designed to test the TSS of the grapes in the field. No skills are required to use this device and results are achieved within seconds.

Objectives

- i.) Determine the accuracy of the Brixmaster when compared to a refractometer.
- ii.) Determine the berry position that gives an indication of the TSS of the bunch

2. Materials and Methods

The Brixmaster was tested on Thomson Seedless, Red Globe, Sunred Seedless, Barlinka, Bonheur, La Rochelle and Dauphine. The Brixmaster consist of a solution that is prepared at a specific Brix setting and by dropping a berry into the solution. The berry either float when the Brix is not equal or higher than the set Brix of the solution or the berry sinks when it has a higher Brix. The Brixmaster solution was prepared for every cultivar at 4 different Brix settings namely: 14, 16, 18 and 20. Three different berry positions on the bunch were tested (Diagram 1). During a test the berry numbered 1 is tested first at the highest Brix setting. When the berry floats, the sugar content is too low and the berry is then tested at a lower Brix setting until it sinks. The other 2 berries (numbered 2 and 3 are also tested at this specific Brix setting. The bunch is than ranked

Directors

H Lotter
N Dicey
D Carinus
B Kriel
A Rabe
B Wessels

into 1 of three classes where class 1 is where all 3 berries sink, class 2 where 2 berries sink and class 3 where only 1 berry sinks. The TSS of the 3 berries is determined with an Atago handheld refractometer. All the berries on the bunch are then juiced to determine the TSS of the bunch.

3. Results and Discussions

Table 1. The Accuracy of the Brixmaster in comparison with a refractometer at different Brix settings

Brix setting	TSS	% Accuracy
14	15.4	84.2
16	17.4	91.5
18	18.9	68.4
20	20.8	88.0

From table 1 it can be seen that the Brixmaster was accurate at all the different Brix settings. The TSS of the bunch determined the accuracy. Fig 1 is an indication of the influence of berry position on the accuracy of the Brixmaster. It is clear that berry position did not have an influence on the accuracy of the Brixmaster. But the device seems to be more sensitive at the higher Brix settings (18 and 20).

4. Conclusion

The Brixmaster is highly accurate for the cultivars that have been tested. It is therefore advised that the Brixmaster should be tested on all exported table grape cultivars. It is also necessary to determine the accurate quantity of Brixmaster chemical to prepare a solution for a specific Brix setting.

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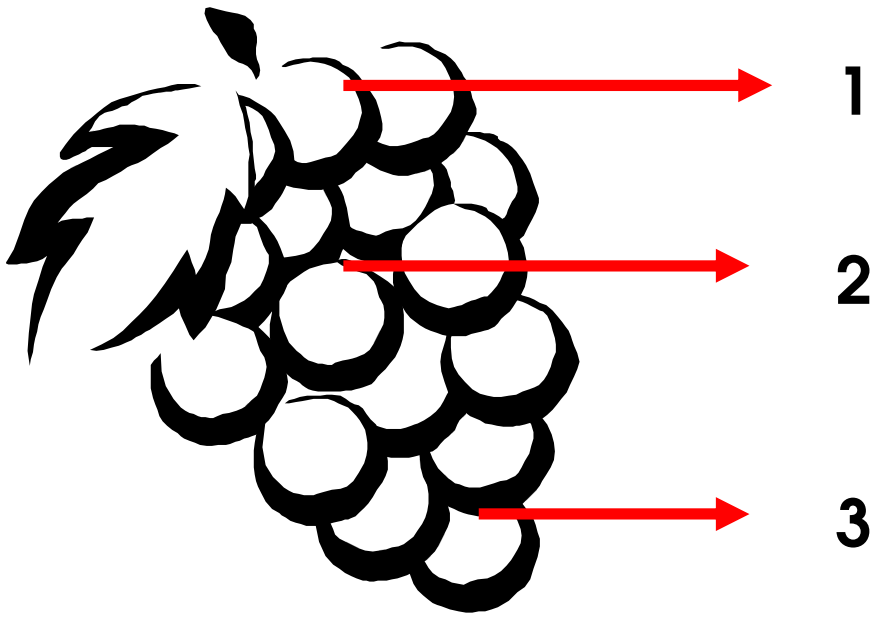


Diagram 1: Berry position on bunch