breeding and growing ‘super-fruit’ high antioxidant plums

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Introduction

DPI&F scientists have bred a new deep red flesh variety of plum with up to five times the level of anti-oxidants of other plums. To ensure each crop produces the best plum for both health benefits and eating experience, a study was conducted to determine the best harvest date and cold storage times.

Method

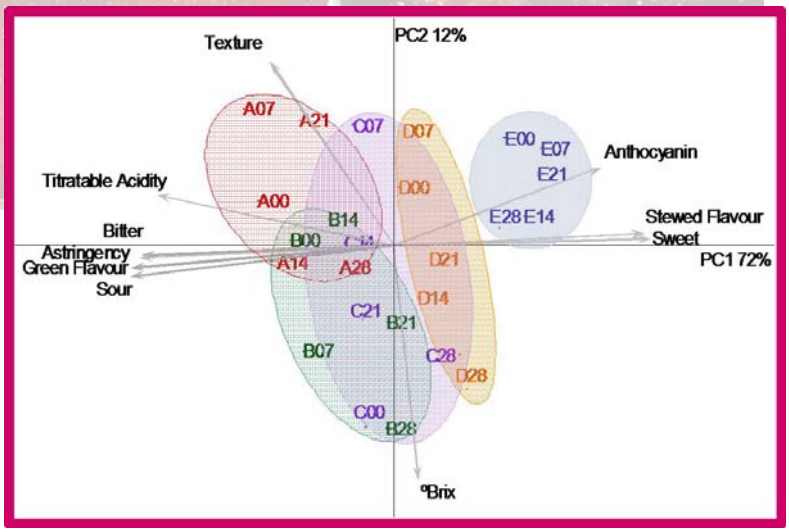
Fruit was sampled over five successive weeks (A, B, C, D, E) and cold-stored for five successive weeks (0, 7, 14, 21, 28 days). Sensory evaluation with 9 trained panellists (sour, bitter, astringency, sweet, green flavour and stewed fruit flavour) was conducted and physicochemical measurements (anthocyanin by spectrophotometry at 515 nm, texture: compressive force measurement by penetrometer, titratable acidity and percentage soluble solids or °Brix) were undertaken.

Results

Samples were significantly discriminated (ANOVA) by their harvest date and by the principal component analysis illustrating a 72 percent discrimination rate.

Plums harvested earlier (A and B) were characterised by their perceived sourness and high titratable acidity whereas plums harvested later (E) were characterised by their high content of anthocyanin and perceived sweetness.

The °Brix explained 12 percent of the variation between samples where those samples stored for a longer period tended to contain higher sugar levels. Interestingly, °Brix had no relationship with fruit maturity within the 5 weeks of harvest studied.



- A later harvest date improves the content of anthocyanin and sensory quality
- The titratable acidity can be used to predict the optimal harvest date
- The anthocyanin content remains stable throughout cold storage

Conclusion

As a fresh fruit, consumers require a pleasant taste before they will consider the plum for its health value. Harvesting plums too early will have a negative impact on sensory quality and could result in rejection of the fruit by consumers.

For processing, where high anthocyanin content is the objective, plums can be harvested later and cold stored before value addition.