Apricot texture: variability as a function of cultivar, influence of maturity and impact of cooking

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APRICOT TEXTURE: VARIABILITY AS A FUNCTION OF CULTIVAR, INFLUENCE OF MATURITY AND IMPACT OF COOKING

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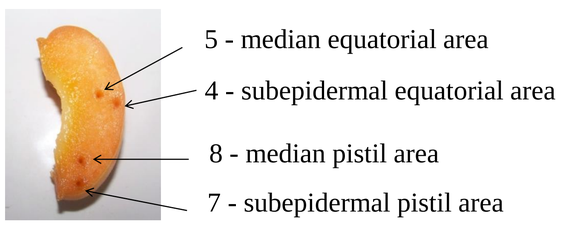
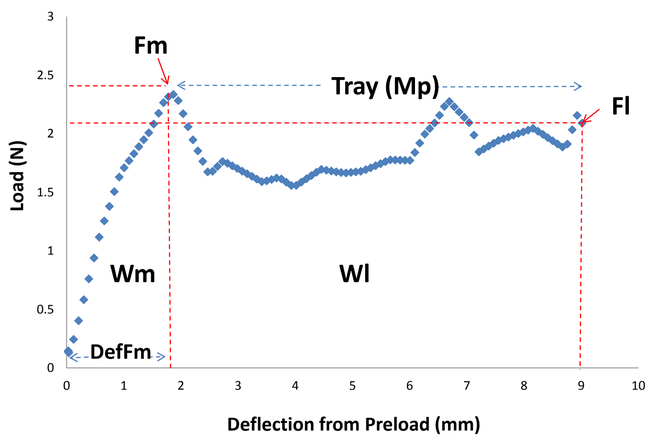
Introduction

Apricot (*Prunus armeniaca L.)* is a fleshy fruit of real economic and nutritional interest. The rapid loss of fruit firmness is a decisive factor for quality and to decide apricot use (fresh or processed) and commercialization ways (short or storage). To better understand the texture heterogeneity in apricot, we studied the impact of the harvest stage and the effect of a heat treatment on a large range of cultivars.

Materials and methods

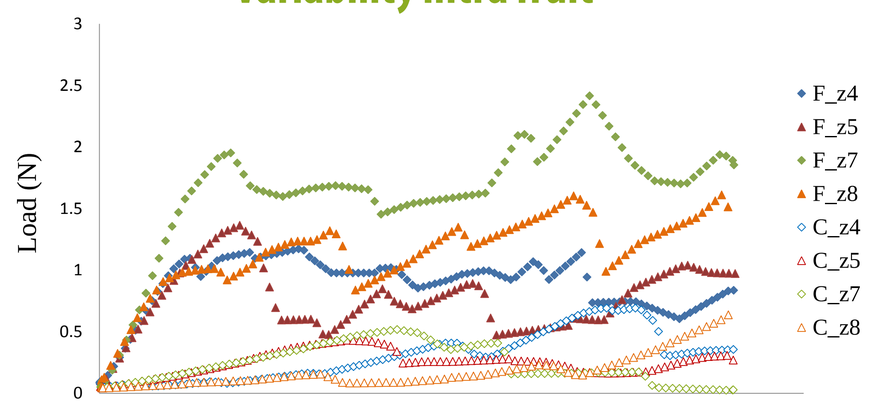
18 apricot cultivars were collected from Amarine (Gard) and Gotheron (Drôme) INRA domains in 2015. Maturity stages were defined by **compression test**, with the same pressure value for all cultivars: M1 130 kPa (commercial) and M2 100 kPa (half-ripe). Apricot halves were cooked in a light syrup until 85°C at heart. **Puncture test** (diam. 2mm, height 9 mm) and **shear test** (Kramer cell) were performed with a Texturometer TaPlus (Lloyd).





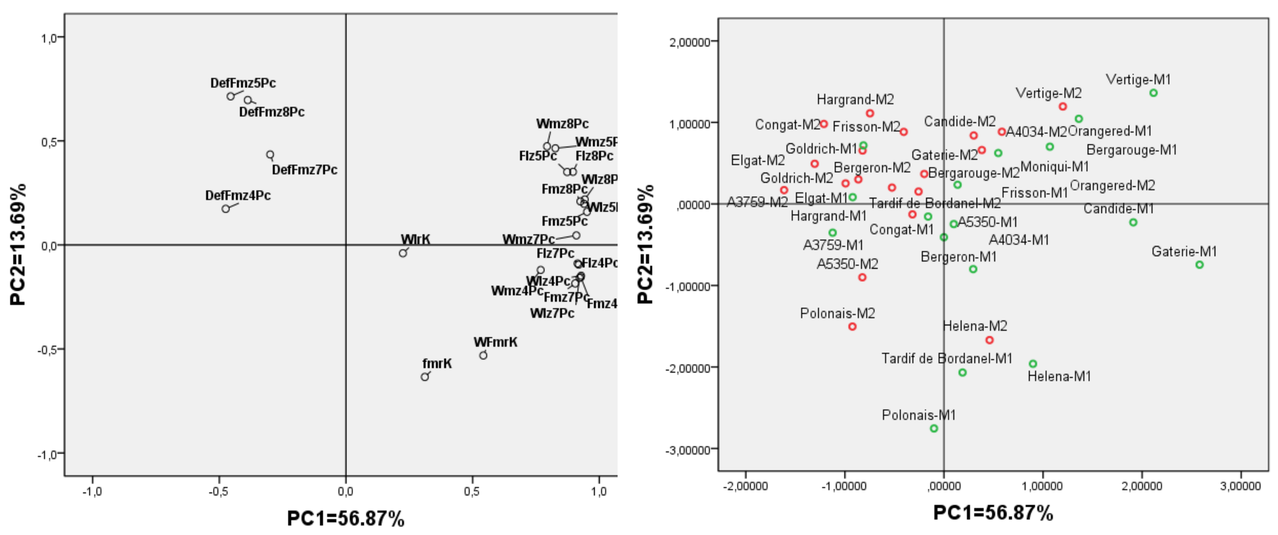
Localization of the puncture tests and parameters obtained according the force / displacement curve. Fm (N): maximum load, DefFm(mm): deflection at maximum load, Wm(J): work to maximum load, Fl(N): load at limit, Wl(J): work to limit, Mp (N): load average for the tray.

Variability intra fruit



The comparison of the puncture curves for Orangered (M2) illustrates the texture heterogeneity of the 4 areas for fresh (F) or cooked (C) apricots.

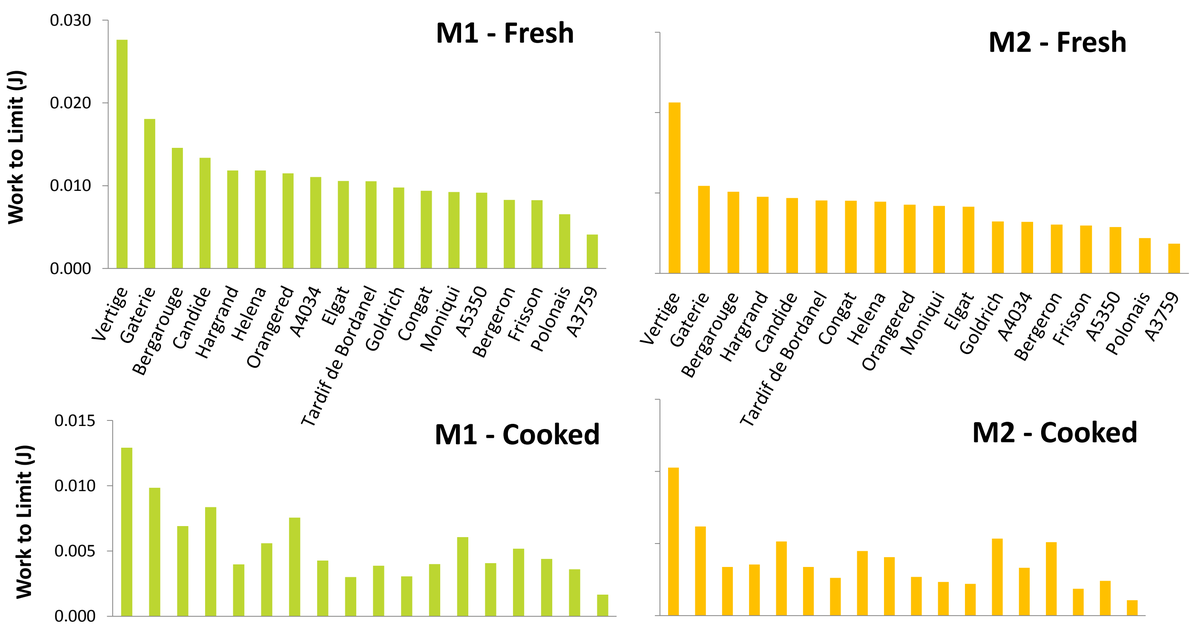
PCA on cooked apricot data



The texture data (puncture and shear tests) allow the segregation of cultivars. The maturity stage effect on the apricot texture is higher than the cultivar effect.

The median areas (pistil and equatorial) of apricot flesh are the best areas to discriminate varieties suitable for processing.

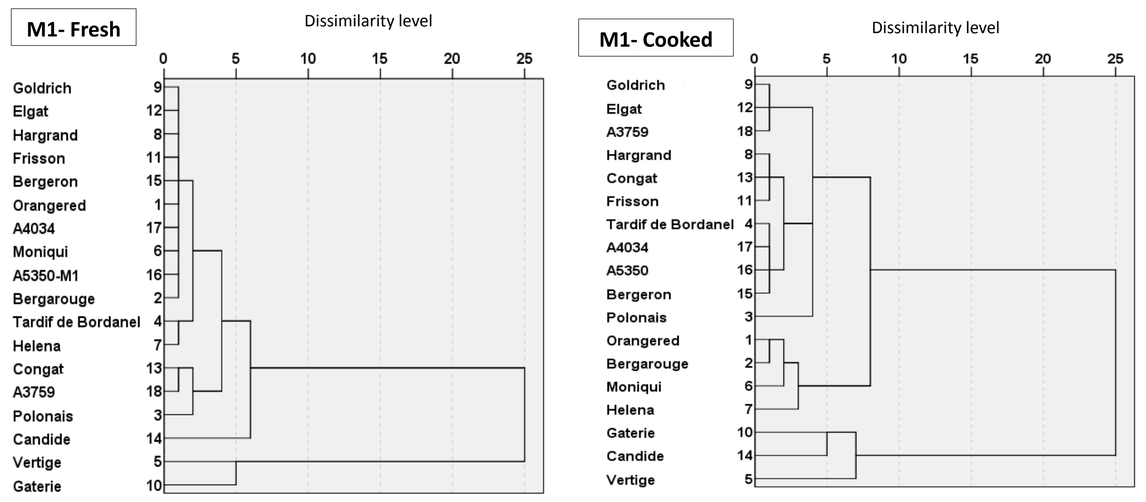
Impact of maturity stage and cooking



The classification according the work at limit (Wl) for median equatorial area (z5) shows the differences between the cultivars. For fresh apricots, classification obtained for M1 stage changes for more ripe fruits (M2). After cooking, values are divided by 2 and the classifications determined with fresh fruits are modified.

The firmest and the less firm cultivars keep their property after a heat treatment for the two maturity stages. Vertige, Gaterie, Bergarouge, Hargrand and Candide represent the more resistant apricots after cooking, so the more suitable cultivars for industrial process.

Hierarchical Clustering of cultivars



The clusters dendograms on puncture test highlighte the ability of different varieties for cooking and the texture variation between fresh and cooked apricots.

Shear test cannot allowed to classify cultivars, only Hargrand being separated.

Conclusion

- The impact of cooking process, maturity stage and cultivars on apricot texture is highlighted.
- The median area variables discriminate the texture variability between cultivars; it is the relevant area that can be used to determine the suitable varieties for industrial processing.
- Cultivars show different degrees of susceptibility to heat treatment, probably in relation to their physicochemical characteristics.

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