

[P2.1.036]

**Thinning via shading: The sensory quality of apples grown by a new technique**

M.L. Corollaro<sup>\*1,2</sup>, I. Endrizzi<sup>1</sup>, E. Aprea<sup>1</sup>, M.L. Demattè<sup>1</sup>, F. Costa<sup>1</sup>, F. Biasioli<sup>1</sup>, L. Corelli Grappadelli<sup>2</sup>,  
F. Gasperi<sup>1</sup>

<sup>1</sup>Fondazione Edmund Mach, Italy, <sup>2</sup>Università di Bologna, Italy

Managing the orchard light microclimate is an emerging technology to improve high quality fruit production. Sensory analysis was used to evaluate eating quality of apples from trees either thinned by photosynthetic inhibition or grown under photoselective hail nets.

Apples were evaluated by a trained panel (10 judges) according to quantitative descriptive analysis for 13 attributes (2 for odour and flavour, 2 for external appearance, 6 for texture, and 3 for taste properties). The same fruit were subjected to instrumental measurements by a TA-XT texture analyzer, to measure mechanical and acoustic response during a compression test: Furthermore cell anatomical features were studied by microscopy.

Rosy Glow trees were thinned by 90% neutral shading cloth applied 30 days after full bloom for one week, and fruit were compared with fruit from chemically thinned trees. The efficacy of shading is comparable with the chemical thinner, although the costs are not comparable yet.

Fuji apples were sourced from sectors of an orchard covered with photoselective hail nets: black (control), white, red, yellow, blue.

Rosy Glow apples showed no sensory, instrumental or histological differences between chemical or shade-thinning: although shading is applied later than chemical thinning (i.e. further down the cell division stage), this did not have an impact.

In Fuji, the panel did not perceive any difference among the coloured nets. Nevertheless, small but significant differences were found in mechanical and acoustic properties of these fruit, related to cell packing. Variations in spectral light composition may cause different cell division and expansion rates in the fruit, which could affect texture characteristics.

These preliminary results confirm light management in the orchard as promising to improve quality and reduce chemical use in apple production.

Keywords: quantitative descriptive analysis, texture, shading, fruit anatomy