

**Title** Do apple cultivars with similar firmness have similar sensory ratings for texture?  
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### **Abstract**

Puncture firmness is the most widely utilised instrumental method for assessing apple texture. Despite its widespread use in industry and research, there is a limited understanding of how effective the puncture test is for predicting sensory responses across cultivars. This knowledge is essential for evaluating new genotypes for texture in breeding programmes and for setting minimum firmness standards in the marketplace. A trained sensory panel was used to compare ten apple cultivars for texture and juiciness, and the relationship with puncture firmness determined. Oscillatory rheology and the kinetics of juice release from a domestic juicer were also evaluated as new approaches for predicting sensory dimensions not predicted by the puncture test. A comparison of apple cultivars with moderate firmness (60-65 N) showed that 'Pink Lady' was less crisp and juicy than cultivars with similar firmness ('Fuji', 'Granny Smith', and 'Pacific Rose'). Likewise, 'Granny Smith' had lower juiciness and crunchiness than 'Fuji' and 'Pacific Rose' despite having similar puncture firmness. These results suggest that the puncture test has limitations for predicting sensory responses across cultivars, and that sensory panels remain the best method to assess the full texture profile for apples. There is also a need for continued research on new instrumental measures of texture so that the dependency for sensory panels can be reduced.