Abstract

The description of fresh apple textural quality proposed here is unique in that it integrates structural, sensory, and consumer information. To demonstrate its benefits, 24 apple (*Malus sylvestris* var. *domestica* [*M. pumila*]) cultivars were sampled over two harvest seasons and analysed using microstructural and sensory techniques. Cultivars were selected to cover a range of known sensory textures, and microstructural profiles were compiled in parallel with sensory and instrumental studies. Each cultivar was prepared for conventional scanning electron microscopy observation using standard methods. Representative fruits from each cultivar were photographed at three magnifications to visualize fruit architecture, tissue relationships, and size, shape, and arrangement of cells within layers to compile the microstructural profile. A trained sensory panel evaluated the cultivars for crispness, surface coarseness, sponginess, hardness, juiciness, degree of melting, mealiness, and skin toughness, while aconsumer panel rated liking. This information was compiled into a texture profile. The microstructural and texture profiles were then combined into a cultivar profile for each sample. Cultivar profiles were collected to form a database; subtle similarities and differences among the 28 market-quality samples were interpreted and noted. With this technique, those structures with similar sensory properties can be identified with some form of microscopy. Clarifying and predicting the parameters that are related to textural quality in new cultivars will streamline the introduction process.