Abstract:

To date, the Australian macadamia industry has not been able to obtain reliable sensory measurements (hedonic and diagnostic) that could be linked to processing and other quality criteria. This study measured consumer preferences for Australian macadamia nuts using consumer preference testing and descriptive sensory profiling. Macadamia were subjected to three main treatments: roast – five levels (raw, 135°C-12min, 135°C-18min, 155°C-5min, 155°C 8min), size – three levels (17mm, 19mm, 21mm diameter), and age – three levels (0 weeks, 12 weeks at 40°C, 12 weeks at 40°C + 2 weeks at 50°C). Macadamia kernels were obtained from nine sources (combinations of region/site/cultivar) to investigate possible source variation in sensory quality. The sensory panel was trained to provide diagnostic measures of sensory character and this information was combined with consumer preference data to determine the sensory drivers of consumer preference. Overall, consumers preferred roasted macadamia and the level of roast (temperature x time) was an important means of controlling preferred odour and colour characteristics. Consumers also preferred 19 and 21 mm diameter kernel and discerned differences in the odour quality of fresh and aged kernel. All kernel sources were equally preferred by consumers. The trained panel successfully diagnosed each product treatment in terms of sensory character. Two levels of roasting, varying in temperature and time (135°C for 18min or 155°C for 8min), had a similar effect on the sensory character of macadamia kernel. While the peroxide value of kernel aged for 14 weeks was within the range of commercially acceptable samples, the trained panel detected a *stale/rancid* odour, flavour and aftertaste in this kernel. Specific attributes of odour, appearance, flavour, texture and aftertaste that drive consumer preference were identified by combining trained panel diagnostic assessments with consumer preference judgements.