

Comparison of the roasting behaviour of *Macadamia tetraphylla* L. Johnson kernel with that of commercial macadamia varieties

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The roasting responses and kernel composition of five *M. tetraphylla* L. Johnson genotypes from wild populations and three commercial cultivars of *M. integrifolia* Maiden & Betche (HAES 246, HAES 344, HAES 849), and a single commercial hybrid (A16) were investigated. Nut-in-husk was tree harvested from all genotypes, mechanically dehusked and dried using a heat pump drier at 30°C. Nut-in-shell at 1.5% moisture content was hand cracked and resultant kernel was separated into 2 subsamples with one analysed for sugar composition using HPLC, and the other used in roasting trials. Six roasting treatments (6-30 minutes) using fan forced ovens were applied to random samples of 5 raw kernel with 3 fully randomised (for oven position and order of roasting) replications. Colour of raw and roasted kernel was measured on the abaxil and adaxil surface with a Minolta Chromameter using CIE L^* , a^* and b^* colour scheme. Results are compared with previous published the roasting responses of macadamia species. There were significant differences in the colour between species prior to roasting and significant difference were observed between species in colour changes after roasting. Contrary to previous reports the *M. tetraphylla* was paler and darkened the least after roasting. There was no significant difference in the sucrose content between the two species, although it tended to be lower for *M. tetraphylla* kernel than commercial cultivars. Sugar content was a significant covariate in colour development commercial cultivars tended to be darker after the longest roast durations. These results indicate to obtain a uniform product cultivars should be segregated but the suggestion *M. tetraphylla* produce dark kernel in response roasting especially when roasted under conditions that produce kernel of colour similar to current commercially processed nuts is not supported. The belief that macadamia species and hybrids had different roast responses has limited the commercial exploitation of *M. tetraphylla*. Our results indicate that greater use of genetic diversity offered by *M. tetraphylla* could be made without detrimentally affecting the roasting response.