Branching patterns of *Melastoma malabathricum L.* as influenced by density regimes

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We assessed branching patterns and developed architectural models of *Melastoma malabathricum* describing branching networks, directionality and dispersion with respect to the mother plant as influenced by density. Matured plants of *M. malabathricum* at the density of 1, 2, and 3 plant box $^{-1}$ were raised in wooden boxes measuring 1 m x 1 m and 8 cm in depth, previously filled with garden soil of the Malacca series. The primary, secondary and tertiary branches, their respective angles and lengths were measured to assess branching patterns as influenced by density. Mean vectors of branches concentration were measured for every 50 cm intervals of plant pressure of the neighbors. Circular statistics was applied to test whether the plant in a high density would preferentially bend towards the incoming solar radiation or otherwise. Most branches were concentrated in the opposite direction and away from each other with a mean vector of 212.9°. Rayleigh's test (z values) showed the branches were distributed uniformly in different direction (0° - 360 °) throughout the plant height around the mother plant. An increase in plant density has led to parallel increase in modular competition affecting distribution of branch modules, their directionality and dispersion, registering respective mean vectors of 222 °, 208.9 ° and 214.2 ° for plants at the densities of 1, 2 and 3 plants box $^{-1}$. The concentrations of branch modules were quite uniform around the mother plant. We found that the concentrations of axial branch modules devolved away from the maximum competitive pressure in terms of branch axial angle was higher among neighbours at the density of 3 plants/box compared with those plants at the respective densities of 1 or 2 plants box $^{-1}$. The resultant spatial pattern of competing plants displaying reduced overlapping of branches was a manifestation of the competitive vectors integrating neighbour effects between them.

Key words: *Melastoma malabathricum*, branching networks, directionality, dispersion, neighbours, Rayleigh's z.