RELATIONSHIPS BETWEEN HEIGHT AND PHYSIOLOGICAL, MORPHOLOGICAL, AND ANATOMICAL ASPECTS OF 39 SEEDLINGS OF 'COLIN V-33' AVOCADO

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The majority of the avocado cultivars achieve large size; therefore, obtaining small trees is recommended. In order to identify some physiological, morphological, and anatomical characteristics as selection indices for small avocado trees, 39 segregant trees of 'Colín-V33' with contrasting height were studied, recording 70 characteristics associated with the following: growth habit, tissues of annual shoot (mainly xylem), stomata and gas exchange. For analysis, the trees were classified into four groups according to their height: 1 (below 2.49 m), 2 (2.50 to 3.99 m), 3 (4.0 to 4.49 m), and 4 (above 4.50 m). After a selection of variables, 30 characteristics per genotype were chosen to analyze them by means of a multivariate discriminant analysis using the groups described as categorical variables. Variables that were responsible for discrimination of small trees were: thicker phloem, larger basal diameter in annual shoots and higher proportion of bark in the trunk. The characteristics of concentration of substomatal CO_2, elongation index of xylem vessels, leaf temperature and thickness of epidermis, participated in the discrimination of groups, although apparently they were not directly related with the height of the tree. A variance analysis determined that the only significant variables when comparing groups were: thickness of phloem in annual shoot and proportion of bark in the trunk.