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Identification of relevant morphological, topological and geometrical variables to characterize the architecture of rose bushes in relation to plant shape

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Résumé en anglais	Plant shape is a major component of the visual quality of ornamental plants. It is the result of their architectural construction. It can be analyzed by breaking down the plant into entities (axis, metamer) that can be characterized morphologically, topologically and geometrically. Eight bush rose cultivars were selected for their contrasting shapes (from upright to spreading) and their architecture was digitized at two scales, the plant and the axis, differentiating between short and long axes. Thirty-five variables were measured. Measurement acquisition is nevertheless tedious and time-consuming and not really compatible with an analysis involving a large number of individuals. To diminish these constraints, our approach aimed at reducing the number of variables measured, limiting ourselves to the ones most relevant for describing the architecture. A selection of variables was made using the following criteria: to represent the different categories of variables describing the plant architecture; to explain the variability observed; to present the weakest correlation between them. Seven variables were selected: at the plant scale, the number of determined axes, the number of long axes of order 3 and the branching order number; at the long axis scale, the number of metamers and the length of the axis; and at the short axis scale, the basal diameter of the axis and the branching angle of the cord in relation to the vertical axis. Four architectural profiles were differentiated based on these seven variables. Moreover, a high correlation was revealed between some of these architectural variables and a shape descriptor.

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