NON-DESTRUCTIVE ESTIMATION OF LEAF AREA IN SOME MEDICINAL PLANTS

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ABSTRACT

In this research, we attempt to offer the reliable equations that predict leaf area for some medicinal plants namely Ecballium elaterium L., Papaver somniferum L., Physalis alkekengi L. and Verbascum phlomoides L. growing wild in Black Sea Region of Turkey. Lamina width, length and leaf area were measured without destroying to develop the models. The actual leaf areas of the plants were measured by PLACOM Digital Planimeter, and multiple regression analysis with Excel 7.0 computer package program was performed for the plants separately. The produced leaf area prediction models in the present study are $LA = (5,033387) + [0,024014 \times (L^2 \times W)] + [0,085096 \times (L \times W^2)] + [-0,0049 \times (L^2 \times W^2)]$ for Ecballium elaterium, $LA = (114,83) + (-11,355 \times L) + (0,346 \times L^2) + [0,559 \times (L \times W)]$ for Papaver somniferum, $LA = (-5,11148) + (3,868082 \times L^2) + [-0,05963 \times (L^2 \times W)] + [0,008349 \times (L^2 \times W^2)]$ for Physalis alkekengi and $LA = (-47,7135) + (9,169684 \times L) + (2,635646 \times W^2) + [0,030192 \times (L^2 \times W)] + [-1,84291 \times (L \times W)]$ for Verbascum phlomoides where LA is leaf area, W is leaf width, L is leaf length. r2 values and standard errors were found to be significant at the $p < 0.001$ level.

Key Words: Medicinal plants, leaf area, modeling