Environmental influence on total phenols in leaves of Myrcia tomentosa (Aubl.) DC.

R. H. BRANDÃO, L. L. BORGES, E. C. CONCEÇÃO and J. R. PAULA

1FF-Universidade Federal de Goiás

Palavras Chave: Myrtaceae; stepwise; cluster analysis.

Introduction: Myrcia tomentosa (AUBL.) DC., Myrtaceae, popularly known as “goiaba-brava” is found in the Brazilian Cerrado. In this study we investigated the environmental influence in concentrations of total phenols of M. tomentosa leaves.

Experimental: Samples were collected in April 2010, August 2010, December 2010 and April 2011 in the following cities: Hidrolândia (16° 53’ 59,4” S; 49° 13’ 29,4” W; 786 m), Nova América (15° 01’11,8”S;49°52’32,2”W;756m), Crixás (15° 00’30,2” S; 49° 58’ 51,6” W; 755m), Pires do Rio (17° 12’35,5”S;49° 58’ 51,6” W; 852m), São Gonçalo do Abaetê (18° 20’27,2”S; 45° 51’ 36”W; 919m). Samples of leaves were dried at room temperature and crushed in a grinder of knives, resulting in the powder used in the assays. The method of Hagerman and Butler was used for assay of total phenols (TP). All tests were performed in triplicate with a coefficient of variation below 5% (Waterman, P. G. Oecologia, 72, 137, 1987). Environmental factors were analyzed: soil composition, chemical foliar analysis and climatic data. A Multiple Regression Analysis (stepwise method) was used to evaluate the relationship of total phenols (dependent variable) with environmental factors (independent variables). Cluster Analysis was also applied to the study of similarity of samples on the basis of constituent distribution and hierarchical clustering was performed according to Ward’s variance minimizing method (Ward, J. H., J. Americ. Stat. Assoc., 58, 66, 1963). Results/Discussion: Analysis of stepwise Multiple Regression evaluated the influence of environmental factors on changes in the levels of total phenols present in leaves (TP) through the following equation (s=soil; l=leaf):

$$TP(\%) = 15.755 - 0.2033N_s - 0.1994Ca_l - 0.6152Mg_l$$

From the Cluster Analysis, we found that the main factor to influence the chemical composition of leaves of M. tomentosa was the location of the sampling and the time exerting less influence.

Conclusion: This study suggests that the main factors influencing the concentration of total phenols were: N_s, Ca_l and Mg_l.

Funding: CAPES and CNPq. Acknowledgment: The authors are indebted to CNPq and CAPES.