19ᵗʰ Malaysian Society of Plant Physiology Conference -Sustainable Crop and Plant Productivity in relation to Climate change. 18-20 November, 2008,Copthorne Orchid Hotel, Penang.

The Impact of Park and Roadside Trees on Microclimate in Urban Areas

ZAINUDIN, S.R[1], SIM, S.F. and MUSTAFA, K.

[1] Department of Plant Science and Environmental Ecology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

Tel : +6082-583015, H/P 016-8980432 ; Fax :+6082-583160;

E-mail : zsrubiah@frst.unimas.my, drsitirubiah@yahoo.com

Abstract

Trees planted in cities have an important positive effect on the urban population. One such effect is the amelioration of microclimate. The aim of this research is therefore to assess the correlation between parameters that affect the microclimate of parks and roadsides in Kuching city. The air temperature, relative humidity and solar radiation in the sun and shade of trees in urban parks and along roadsides were measured and compared. The results indicate that tree species, tree heights and crown diameters affect the environmental variables with respect to sites characteristics. The air (A) temperature reduction percentage (dTair %), air relative humidity increase (dTRh %) and solar radiation (L) percentage that passes through the trees foliage to their shade creates an exponential function of dA% = a.e-b.L. These functions are also applicable to the limiting variation values of the parameters. Using L = 0 (meaning Lightsh=0, which is the case for an extremely dense tree), the values from this particular parameter are the maximum possible. These maximum values are characteristic features of the parameter variation for the particular research area. The maximum values for the trees in the parks of Kuching are maxdTair % ≈ 8.0%, maxdRH% ≈ 10.0% and for roadsides are maxdTair %≈ 2% and maxdRH% ≈13%. Trees planted closely in parks with dense crown and well spread foliage filter intercept more light compared to roadside trees. The value of L for roadside trees is seven times higher than park trees.

Key words : Urban environment, microclimate, tree species, parks, roadsides