A Simple Modelling of Green Roof Hydrological Performance Using Response Surface Methodology

ABSTRACT

Response Surface Methodology is an optimization tool used for modelling works and has been widely used for modelling, optimizing,and identifying the interrelationship between input parameters and output variables. However, it has yet to be discovered as a tool for modelling green roof performance. This paper aims to explore the feasibility of Response Surface Methodology in Minitab to investigate the green roof hydrological performance in terms of peak runoff, peak attenuation,and water retention. In this study, Response Surface Methodology is used to identify model equations to predict hydrological performance of green roof, as well as to investigate the relationship between green roof slope, water absorption of waste material and water absorption of natural fibre on the hydrological performance of green roof system. The findings showed that the generated mathematical model equations can forecast the peak runoff, peak attenuation, and water retention of a green roof system. The results of the relationship between the input parameters and the output variables are shown using 2D contour plot and surface plot. The generated 2D contour plot and surface plot revealed that the input parameters have significant impact on the peak runoff, peak attenuation, and water retention of a green roof system.