Instability Index Method and Logistic Regression to Assess Landslide Susceptibility in County Route 89, Taiwan

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Abstract : This study aims to set up the landslide susceptibility map of County Route 89 at Ren-Ai Township in Nantou County using the Instability Index Method and Logistic regression. Seven susceptibility factors including Slope Angle, Aspect, Elevation, Distance to fold, Distance to River, Distance to Road and Accumulated Rainfall were obtained by GIS based on the Typhoon Toraji landslide area identified by Industrial Technology Research Institute in 2001. To calculate the landslide percentage of each factor and acquire the weight and grade the grid by means of Instability Index Method. In this study, landslide susceptibility can be classified into four grades: high, medium high, medium low and low, in order to determine the advantages and disadvantages of the two models. The precision of this model is verified by classification error matrix and SRC curve. These results suggest that the logistic regression model is a preferred method than instability index in the assessment of landslide susceptibility. It is suitable for the landslide prediction and precaution in this area in the future.

Keywords : instability index method, logistic regression, landslide susceptibility, SRC curve
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