Stratified Random Sampling: A Sampling Technique for Mapping Termite Hazard in Urban Environment of Bandung City

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Abstract

A proper sampling technique is required for drawing precise conclusions from a population. A map of termite hazard in an urban environment can be done using stratified random sampling. This technique has been applied on research in Bandung City. A total of 700,000 houses are scattered in 30 districts in Bandung City and were represented by 400 sample-houses used to map termite hazard in those buildings. The samples were stratified based on the density of houses in each district. Babakan Ciparay district was represented by 24 sample-houses, Bandung Kulon 23, Kiaracondong 21, Coblong 21, Bojongloa Kaler 20, Batununggal 20, Sukajadi 18, Cibeunying Kidul 17, Cicendo 16, Andir 16, Buah Batu 15, Bojongloa Kidul 14, Regol 13 , and Sukasari 13 respectively. While Rancasari district is represented by 12 houses, Ujung Berung 12, Antapani 12, Cibeunying Kaler 12, Lengkong 12, Cibiru 11, Astanaanyar 11, Arcamanik 11, Mandalajati 10, Bandung Kidul 10, Cidadap 9, Panyileukan 6, Sumur Bandung 6, Gede Bage 6, Bandung Wetan 5, and Cinambo 4. The sample-houses were selected randomly based on data of house populations of each district. The field survey was conducted from March to December 2012.

The study concluded that 38.75% of houses in Bandung City were attacked by termites. Five species of termites in three families were found to damagethe houses, namely *Cryptotermes dudleyi* (Kalotermitidae); *Coptotermes gestroi* (Rhinotermitidae); and *Macrotermes gilvus*, *Odontotermes javanicus*, and *Ancistrotermes pakistanicus* (Termitidae). To have a better understanding and accuracy about termite hazard in the city of Bandung, a sampling technique known as stratified random sampling was used. By using 400 samples, we believe that this survey has a confidence level 95% and margin of error ± 5%. It was the first ever reported using the said method.

Key words: stratified random sampling, *Macrotermes gilvus*, urban environment, sampling technique