



**CORRELATION BETWEEN  
LANDCOVER AND DENGUE IN  
SLEMAN DISTRICT, YOGYAKARTA,  
INDONESIA**

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# INTRODUCTION

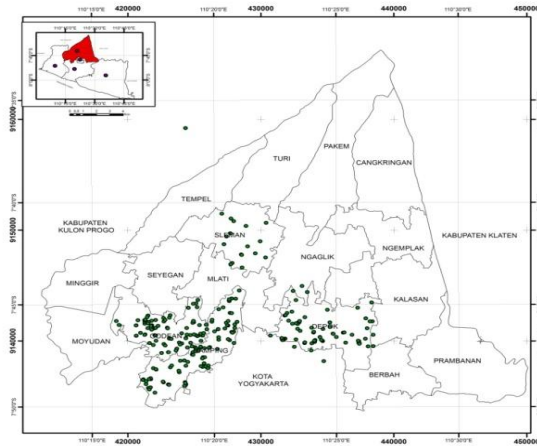
- Dengue Haemorrhagic Fever was transmitted especially by *Aedes aegypti*, so the spreading of this disease is depend on the existence of this mosquito (Ditjen PP&PL, Depkes RI, 2010).
- *Aedes aegypti* has a habitat that is very close to human live (around the house) and has a very short flight distance (50-100m) (Supartha, 2008).
- The vectorial capacity of Aedes is affected by survival and extrinsic incubation periods mosquito's body (Machiel de Frietas, 2010), which correlated with temperature, humidity and rainfall.
- Humidity in micro environment is also affected by the presence of vegetation, especially trees (Ainy, 2012).

# AIM OF STUDY

- To prove the relationship between land cover with dengue incidence.
- Land cover within the meaning of the ratio between the total building area towards vegetation in the area around the dengue incidence

# METHOD

- This research is an analytical survey, with cross sectional design
- Sample
  - Patient of DHF year 2013 and environment around the house (radius 100m)
- Sampling Method
  - Total sampling
- Location:
  - Sub-district of Depok, Gamping, Godean, and Pakem of Sleman District, Yogyakarta



The coordinates of DHF patients



Buffering with diameter of 200 m



Overlaying: citra quickbird + coordinates point



Digitation: buildings, vegetation, buildings + vegetation



Calculation of buildings area, vegetation, buildings + vegetation



Analysis Pearson Correlation



# RESULT AND DISCUSSION

## *Study area*

- Sleman district is in northern part of Yogyakarta, Indonesia (110° 33' 00" and 110° 13' 00" E, 7° 34' 51" and 7° 47' 30" latitude).
- There were 17 sub-districts and 86 villages with 1.13 million people live in this region (Pemkab. Sleman, 2014).

## *Incidence Rate of DHF year 2013*

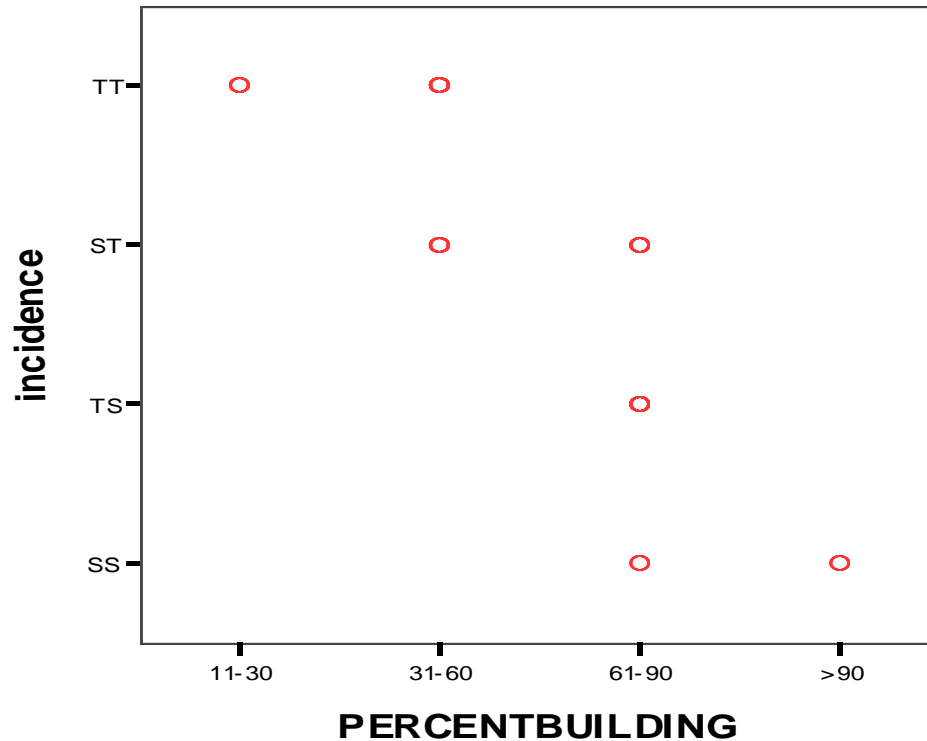
- Gamping 135 cases ; Godean 115 cases; Depok 82 cases; Sleman 25 cases; Pakem 0 cases

Table 1. Number of dengue cases based on category proportions of the building - vegetation

Category proportions of the building - vegetation	Number of Cases
11-30 %	18 (6,89%)
31-60 %	116 (44,44%)
61-90 %	117 (44,83%)
>90 %	10 (3,83%)

Source: data processing





- Figure 1. Scatter plot Pearson's Correlation *landcover* (percentage of building towards vegetation) with DHF cases ( $p=0,000$  and  $r=-0,815$ )

- Incidence of dengue in the region quite a lot the building but with vegetation.
- The existence of vegetation serves to keep humid in the micro environment (Ainy, 2012)
- Other Researches
  - Sarfraz *et al* (2012) in Thailand → settlements around horticulture related to house index (HI) in Mei ( $p=0,05$ ) dan perennial vegetation related to container index (CI) ( $p<0,05$ )
  - Vanwambeke *et al* (2006) in Thailand → the axistence of trees and watery land is an important factor in the incidence of dengue in Thailand
  - Cheong *et al* (2014),
    - The extensive settlement have a role in the incidence of DHF in endemic areas of urban
    - The existing of horticulture have a role in the incidence of DHF in sub-urban area
- DHF in Sleman District is a type of sub-urban and the vegetation around the house be a factor to consider in controlling dengue

# Conclusion

- The percentage of building against vegetation surrounding correlate with the incidence of DHF with the pattern of the building the greater, the lower the incidence of dengue.

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