

Maneetip Khunthong 2013: Soil Organic Matter Estimation Test Kit Development. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Assistant Professor Saowanuch Tawornpruek, Ph.D. 68 pages.

Test kit for the estimation of soil organic matter was developed using 544 soil samples to investigate the correlation between soil organic matter content examined by wet oxidation method in laboratory and the test kit newly developed. One hundred random soil samples were tested for the accuracy and precision of the test kit. A study on the correlation between soil organic matter content and soil particles size and color was also carried out on 544 soil samples in addition with the correlation between soil organic matter content and total nitrogen using 41 soil samples.

Results of the relationship between soil organic matter content examined by wet oxidation method in laboratory and the test kit showed a statistically significant correlation at $r^2=0.68$ ($p \leq 0.05$) for the test kit examination. The test kit had ± 1.98 percentage error for accuracy test with 6.85% average relative standard deviation for precision test in the case of random sampling.

A study on the correlation between soil particle size distribution and soil organic matter content revealed that when sand-sized particle increased, organic matter content decreased significantly ($r^2=0.04$, $p \leq 0.05$). In a contrast, organic matter content increased significantly as clay-sized particle increased ($r^2=0.05$, $p \leq 0.05$), while silt-sized particle having no correlation with soil organic matter content. The low soil color value had positively significant correlation with high organic matter content ($r^2=0.15$, $p \leq 0.05$). Furthermore, soil organic matter content was highly positively correlated with total nitrogen content ($r^2=0.86$, $p \leq 0.05$) as shown simple linear regression ($y=0.45x+0.076$).

Student's signature

Thesis Advisor's signature