

**KAJIAN BEBERAPA SIFAT KIMIA TANAH PADA LAHAN  
TERDAMPAK ABU VULKANIS PASCA ERUPSI  
GUNUNG SEMERU 2021**

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# **KAJIAN BEBERAPA SIFAT KIMIA TANAH PADA LAHAN TERDAMPAK ABU VULKANIS PASCA ERUPSI GUNUNG SEMERU 2021**

## **Abstrak**

Letusan gunung berapi mengeluarkan material vulkanis yang mengandung unsur hara tanah. Material vulkanis menutupi permukaan tanah dengan ketebalan yang berbeda-beda. Letusan terbaru gunung Semeru (Lumajang, Jawa Timur) terjadi pada tanggal 4 Desember 2021. Penelitian ini bertujuan untuk mengkaji beberapa sifat kimia tanah pada lahan terdampak abu vulkanik pasca erupsi gunung Semeru 2021 di Kecamatan Pronojiwo dan Kecamatan Candipuro. Total jumlah pengambilan sampel 20 (10 sampel tanah kedalaman 0-20 cm dan 10 tanah sampel tanah kedalaman 20-40 cm). Sampel diambil pada bagian tenggara arah erupsi gunung Semeru. Pada tanah terdampak abu vulkanis erupsi gunung Semeru dilakukan analisis pH H<sub>2</sub>O, P-Tersedia, N-Total, C-Organik, Rasio C/N, KTK. Tanah pada kedalaman 0-20 cm memiliki pH H<sub>2</sub>O (5,05-6), P-Tersedia (27,28 ppm -28,91 ppm), N-Total (0,028 % - 0,075 %), C-Organik (0,19 %-0,63 %), Rasio C/N (6,79-10,21), dan KTK (12,73 me/100 g-15,82 me/100 g). Sedangkan pada tanah kedalaman 20-40 cm memiliki pH H<sub>2</sub>O (4,56-6,18), P-Tersedia (23,92 ppm -25,82 ppm), N-Total (0,318 %-0,483 %), C-Organik (3,19 %-4,79 %), Rasio C/N (9,88-13,21), dan KTK (25,12 me/100 g-26,93 me/100 g). Tanah pada kedalaman 20-40 cm terdampak abu vulkanis pasca erupsi gunung Semeru 2021 memiliki potensi tingkat dekomposisi yang tinggi dibandingkan tanah pada kedalaman 0-20 cm. Selain itu keseimbangan antara karbon dan nitrogen pada tanah kedalaman 20-40 cm lebih baik daripada tanah lapisan 0-20 cm.

Kata Kunci : Tanah Vulkanis, sifat kimia tanah, Gunung Semeru, Letusan Gunung Berapi.

# STUDY OF SEVERAL SOIL CHEMICAL PROPERTIES IN AREAS AFFECTED BY VOLCANIC ASH POST- ERUPTION OF MOUNT SEMERU IN 2021

## Abstract

Volcanic eruptions release materials rich in soil nutrients. These volcanic materials cover the soil surface at varying thicknesses. The most recent eruption of Mount Semeru (Lumajang, East Java) occurred on December 4, 2021. This study aims to examine several chemical properties of soils in areas affected by volcanic ash following the 2021 eruption of Mount Semeru in the Pronojiwo and Candipuro Districts. A total of 20 soil samples were collected (10 soil samples from a depth of 0-20 cm and 10 from a depth of 20-40 cm). Samples were taken from the southeast, the direction of the Semeru eruption. The chemical analyses conducted on soils affected by the volcanic ash included pH H<sub>2</sub>O, available phosphorus (P-Available), total nitrogen (N-Total), organic carbon (C-Organic), C/N ratio, and cation exchange capacity (CEC). Results showed that soils at a depth of 0-20 cm had a pH H<sub>2</sub>O of (5.05-6), P-Available of (27.28 ppm -28.91 ppm), N-Total of (0.028 % -0.075 %), C-Organic of (0.19 % -0.63 %), C/N ratio of (6.79-10.21), and CEC of (12.73 me/100 g -15.82 me/100 g). In contrast, soils at a depth of 20-40 cm had a pH H<sub>2</sub>O of (4.56-6.18), P-Available of (23.92 ppm-25.82 ppm), N-Total of (0.318 % -0.483 %), C-Organic of (3.19 % -4.79 %), C/N ratio of (9.88-13.21), and CEC of (25.12 me/100 g -26.93 me/100 g). Soils at a depth of 20-40 cm impacted by volcanic ash post-eruption of Mount Semeru in 2021 have a higher potential for decomposition compared to soils at a depth of 0-20 cm. Additionally, the carbon-to-nitrogen balance in the 20-40 cm soil depth is better than in the 0-20 cm soil layer.



**Keywords:** Volcanic Soils, Soil Chemical Properties, Mount Semeru, Volcanic Eruption