

Populasi Bakteri Amonifikasi dan Kadar Amonium (NH₄⁺) di Bawah Tegakan *Acacia auriculiformis*, *Tectona grandis*, *Melaleuca cajuputi* dan Lahan Pertanian di Gunungkidul

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INTISARI

Populasi bakteri amonifikasi dan kadar amonium di tanah dapat menjadi parameter kesuburan tanah. Informasi mengenai populasi bakteri amonifikasi dan kadar amonium di bawah tegakan *Tectona grandis* (jati), *Acacia auriculiformis* (formis), dan *Melaleuca cajuputi* (kayu putih) berumur tujuh tahun masih terbatas. Tujuan dari penelitian ini adalah menguantifikasi populasi bakteri amonifikasi dan kadar amonium di bawah tegakan formis, jati, dan kayu putih berumur tujuh tahun serta lahan pertanian pada tiga kedalaman.

Rancangan penelitian yang digunakan adalah *purposive sampling*. Pada tiap tegakan, dibuat 3 plot yang diambil sampel tanah dengan tiga kedalaman, yaitu 0-10 cm, 10-20 cm, dan 20-30 cm. Digunakan lahan pertanian sebagai pembanding. Penelitian dilaksanakan pada bulan Desember 2023-Maret 2024. Pengujian populasi bakteri amonifikasi dan kadar amonium dilakukan di Laboratorium Fisiologi Pohon dan Tanah Hutan, Fakultas Kehutanan, Universitas Gadjah Mada.

Hasil penelitian menunjukkan bahwa populasi bakteri amonifikasi di bawah tegakan formis (5,03 Log sel/gram tanah), lahan pertanian (4,95 Log sel/gram tanah), dan jati (4,93 Log sel/gram tanah) lebih tinggi dibandingkan tegakan kayu putih (4,35 Log sel/gram tanah). Kadar amonium terbesar terdapat di bawah tegakan jati (65,53 mg/kg), diikuti lahan pertanian (56,11 mg/kg), kayu putih (54,42 mg/kg) dan formis (51,63 mg/kg). Populasi bakteri amonifikasi dan kadar amonium menurun seiring dengan kedalaman tanah.

Kata kunci: *Tectona grandis*, *Acacia auriculiformis*, *Melaleuca cajuputi*, lahan pertanian, bakteri amonifikasi, kadar amonium

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The Population of Ammonification Bacteria and Ammonium (NH₄⁺) Content Under *Acacia auriculiformis*, *Tectona grandis*, *Melaleuca cajuputi* Stands and Agricultural Land in Gunungkidul

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ABSTRACT

The population of ammonification bacteria and ammonium content are some determinants of soil fertility. There is limited information on the population of ammonification bacteria and ammonium content under seven-year-old *Tectona grandis*, *Acacia auriculiformis*, and *Melaleuca cajuputi* stands in Gunungkidul. The objectives of this research were to quantify the population of ammonification bacteria and ammonium content under seven-year-old *Tectona grandis*, *Acacia auriculiformis*, and *Melaleuca cajuputi* stands and agricultural land at three depth level.

This experiment used *purposive sampling*. In each stand, soil samples were collected from 3 plots at three depth levels (0-10 cm, 10-20 cm, and 20-30 cm). Soil from agricultural land was used for comparison. This research was conducted from December 2023 to March 2024. The population of ammonification bacteria and ammonium content were quantified in the Laboratory of Tree Physiology and Forest Soil, Faculty of Forestry, Universitas Gadjah Mada.

The results showed that the population of ammonification bacteria under the *Acacia auriculiformis* stand (5,03 Log cells/g soil), agricultural land (4,95 Log cells/g soil), and *Tectona grandis* stand (4,93 Log cells/g soil) were higher than the *Melaleuca cajuputi* stand (4,35 Log cells/g soil). The highest ammonium content was found under the *Tectona grandis* stand (65,53 mg/kg), followed by agricultural land (56,11 mg/kg), *Melaleuca cajuputi* stand (54,42 mg/kg) and *Acacia auriculiformis* stand (51,63 mg/kg). The population of ammonification bacteria and ammonium content decreased with deeper soil layer.

Keywords: *Tectona grandis*, *Acacia auriculiformis*, *Melaleuca cajuputi*, ammonification bacteria, ammonium content

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