

ABSTRAK

APLIKASI PUPUK ANORGANIK DAN BIO-KOMPOS (*Tea waste*) TERHADAP KELIMPAHAN BAKTERI *AZOTOBACTER* SERTA MUTU PUCUK TANAMAN TEH (*Camellia sinensis*) DI PERKEBUNAN PPTK GAMBUNG, JAWA BARAT

Oleh

Rena Ardita

Tanaman teh (*Camellia sinensis*) merupakan komoditas penting yang produktivitasnya dipengaruhi oleh ketersediaan unsur hara dan aktivitas mikroorganisme tanah, seperti *Azotobacter*. Penggunaan pupuk anorganik secara terus-menerus dapat menurunkan kualitas tanah, sehingga bio-kompos *tea waste* dapat digunakan sebagai alternatif sumber bahan organik. Penelitian ini bertujuan untuk mengetahui pengaruh kombinasi pupuk anorganik dan bio-kompos *tea waste* terhadap pH tanah, kelimpahan *Azotobacter*, volume akar, dan Analisa Mutu Bahan Baku (AMBB) tanaman teh. Penelitian menggunakan Rancangan Acak Kelompok Lengkap (RAKL) dengan 16 kombinasi perlakuan, terdiri dari empat taraf pupuk anorganik (0%, 50%, 75%, dan 100%) dan empat dosis bio-kompos *tea waste* (0, 1, 2, dan 3 ton/ha), dengan 3 ulangan sehingga diperoleh 48 unit percobaan. Data berdistribusi normal ($p > 0,05$) dan dianalisis menggunakan ANOVA pada taraf nyata 5% ($\alpha = 0,05$). Hasil ANOVA menunjukkan bahwa kombinasi pupuk anorganik dan bio-kompos *tea waste* berpengaruh sangat nyata terhadap beberapa parameter yang diamati dengan nilai p -value = 0,000 ($p < 0,05$). Perlakuan kombinasi meningkatkan volume akar, dan mutu pucuk tanaman teh. Aplikasi pupuk belum meningkatkan populasi *Azotobacter* (masih $<10^2$ CFU/mL). Produksi AMBB berfluktuasi dengan puncak di Oktober. Perlakuan terbaik adalah T1K0, dengan koloni tertinggi dan mutu pucuk terbaik.

Kata kunci: *Camellia sinensis*, *Azotobacter*, pupuk anorganik, *tea waste*, mutu pucuk

ABSTRACT

Application Of Inorganic Fertilizer And Bio-Compost (*Tea Waste*) On The Abundance Of *Azotobacter* Bacteria And The Quality Of Tea Plant Shoots (*Camellia sinensis*) at PPTK Gambung Plantation, Jawa Barat

**By
Rena Ardita**

Tea plant (*Camellia sinensis*) is an important commodity whose productivity is influenced by nutrient availability and soil microbial activity, such as *Azotobacter*. Continuous use of inorganic fertilizers can reduce soil quality, so tea waste bio-compost can be used as an alternative organic amendment. This study aimed to determine the effect of inorganic fertilizer and tea waste bio-compost combinations on soil pH, *Azotobacter* abundance, root volume, and shoot quality (AMBB). The study used a Randomized Complete Block Design (RCBD) with 16 treatment combinations consisting of four levels of inorganic fertilizer (0%, 50%, 75%, and 100%) and four doses of tea waste bio-compost (0, 1, 2, and 3 ton/ha), with 3 replications resulting in 48 experimental units. Data were normally distributed ($p > 0.05$) and analyzed using ANOVA at a 5% significance level ($\alpha = 0.05$). The ANOVA results showed that the treatment had a highly significant effect with a p-value = 0.000 ($p < 0.05$). The combination treatment increased root volume, and tea shoot quality. This combination has potential as a sustainable fertilization strategy to improve soil fertility and tea quality. Fertilizer application did not increase the *Azotobacter* population (still $<10^2$ CFU/mL). AMBB production fluctuated, peaking in October. The best treatment was T1K0, with the highest colony count and best shoot quality.

Keywords: *Camellia sinensis*, *Azotobacter*, chemical fertilizer, tea waste, shoot quality