

## ABSTRAK

Telah berhasil dilakukan analisis aplikasi bionutrien S267 terhadap fisiologi daun dan produktivitas tanaman kopi arabika. Produktivitas kopi Arabika di Indonesia tergolong rendah dibandingkan dengan potensi hasil yang mampu dicapai. Salah satunya bisa di akibatkan oleh proses fotosintesis yang terhambat karena kurangnya ketersediaan nitrogen untuk mendukung klorofil dalam proses fotosintesis. Tujuan dari penelitian ini untuk mengetahui pengaruh bionutrien S267 terhadap kadar nitrogen pada daun , kandungan klorofil pada daun dan kadar kafein pada biji kopi arabika. Analisis fisiologi daun dilakukan meliputi uji kadar nitrogen dan kandungan klorofil. Sementara itu, dilakukan analisis pada biji kopi dengan uji kromatografi lapis tipis dan uji kadar kafein dengan HPLC. Analisis fisiologi daun dilakukan sebagai tahap awal untuk mengetahui pengaruh aplikasi bionutrien S267 pada tanaman kopi. Hasil penelitian terhadap fisiologi daun menunjukkan perolehan kadar nitrogen untuk tanaman *treatment* yaitu 2,6 dan 2,82 (kontrol 2,55 dan 2,76). Pada uji kandungan total klorofil diperoleh kandungan untuk tanaman *treatment*  $21,27 \pm 0,02$  dan  $10,91$  (kontrol  $18,96 \pm 0,02$  dan  $9,39 \pm 0,004$ ). Hasil penelitian kromatografi lapis tipis metode standar ekstrak metanol memperlihatkan adanya senyawa kafein pada sampel. Pada uji HPLC diperoleh kadar kafein pada sampel *green bean* kontrol dan *treatment* serta sampel biji sangrai kontrol dan *treatment* secara berturut-turut yaitu 1,46%; 2,96%; 2,79% dan 3,94%. Tanaman kopi dengan penambahan bionutrien S267 menghasilkan sebesar 11875 kg/ha kopi gelondongan, 58,33% meningkat dibandingkan dengan hasil panen sebelum penambahan bionutrien S267 sebesar 7500 kg/ha kopi gelondongan.

**Kata kunci** : bionutrien S267, tanaman kopi arabika, nitrogen, klorofil, Kafein

## ***ABSTRACT***

The analysis of the S267 bionutrient application was successfully carried out on leaf physiology and productivity of Arabica coffee plants. Arabica coffee productivity in Indonesia is relatively low when compared to the potential results that can be achieved, one of which can be caused by photosynthesis which is hampered due to lack of availability of nitrogen to support chlorophyll in the process of photosynthesis. The purpose of this study was to determine the effect of S267 bionutrient on nitrogen content in leaves, chlorophyll content in leaves and caffeine content in arabica coffee beans. The analysis carried out included nitrogen content testing and chlorophyll content. meanwhile, an analysis of coffee beans was carried out by thin layer chromatographic tests and caffeine content was tested by HPLC. Leaf physiology analysis was carried out as an initial step to determine the effect of the application of S267 bionutrient in coffee. The results of the study on leaf physiology showed that nitrogen and medicinal plants were obtained at 2,6 and 2,82 (controls 2,55 and 2,67). In the content of total chlorophyll content obtained for treatment plants  $21,27 \pm 0,02$  and  $10,91$  (controls  $18,96 \pm 0,02$  and  $9,39 \pm 0,004$ ). The results of the thin layer chromatographic study of the standard method of methanol extract showed the presence of caffeine compounds in the sample. In the HPLC test the caffeine content of the green bean control and treatment samples were obtained and control and treatment roasted seed samples were 1,46%; 2,96%; 2,79% and 3,49% respectively. Coffee plants with the addition of S267 bionutrients produce 11875 kg/ha, coffee beans 58,33% increasing compared to the yield before adding S267 bionutrients of 7500 kg/ha of coffee.

**Keywords :** S267 Bionutrient, Arabica Coffee Plants, Nitrogen, Chlorophyll, Caffeine