

Pemanfaatan Kulit Buah Kopi dan Bahan Mineral Sebagai Amelioran Tanah Alami

Use of Coffee Pulp and Minerals for Natural Soil Ameliorant

Pujiyanto¹⁾

Ringkasan

Di perkebunan kopi, limbah padat kulit buah kopi belum dimanfaatkan secara optimal. Kulit buah kopi umumnya ditumpuk di sekitar lokasi pengolahan selama beberapa bulan, sehingga menyebabkan timbulnya bau busuk dan cairan yang mencemari lingkungan serta ditinjau dari segi estetika kurang menguntungkan. Penelitian ini dimaksudkan untuk mengkaji pengaruh amelioran tanah asal kulit buah kopi terhadap pertumbuhan bibit kopi maupun kakao dalam rangka menekan dampak negatif dan memperoleh nilai tambah dari limbah kulit buah kopi. Penelitian dilakukan di Pusat Penelitian Kopi dan Kakao Indonesia, Jember, Jawa Timur. Amelioran tanah yang diuji berasal dari kulit buah kopi segar yang telah dihaluskan sehingga membentuk pasta dan ditambah 10% (b/b) bubuk bahan mineral berupa 50% zeolit dan 50% fosfat alam. Pengujian bahan amelioran pada bibit kopi dan kakao dilakukan mengikuti rancangan lingkungan RAL (Rancangan Acak Lengkap) yang disusun secara faktorial. Faktor pertama adalah dosis amelioran yang diberikan dalam 6 taraf yaitu 0, 30, 60, 90, 120 dan 150 g berat kering/polibeg yang berisi 3 kg tanah setara dengan 0, 1, 2, 3, 4 dan 5% bobot amelioran terhadap bobot tanah. Faktor kedua berupa dosis pupuk anorganik berupa pupuk majemuk N-P-K kadar 15-15-15 yang diberikan dalam 2 taraf, yaitu 0 dan 2 g pupuk N-P-K/aplikasi dengan 4 kali aplikasi. Jumlah ulangan adalah 4 kali. Hasil penelitian menunjukkan bahwa limbah kulit buah kopi dapat dimanfaatkan sebagai amelioran tanah yang alami untuk meningkatkan daya dukung tanah bagi pertumbuhan dan produksi tanaman. Komposisi amelioran 90% pasta kulit buah kopi dengan 10% mineral memiliki karakter fisik dan kimia yang baik, yaitu memiliki kapasitas retensi air, KTK, kadar C-organik, dan kadar P yang tinggi sehingga dapat digunakan untuk memperbaiki tanah. Amelioran kulit buah kopi dapat meningkatkan pertumbuhan bibit kopi maupun kakao secara efektif. Terdapat interaksi positif antara amelioran kulit buah kopi dengan pupuk buatan pada variabel bobot basah dan bobot kering tajuk kopi maupun kakao. Amelioran kulit buah kopi dengan pupuk buatan bekerja secara sinergis dalam meningkatkan pertumbuhan tanaman. Aplikasi amelioran kulit buah kopi meningkatkan keefektifan aplikasi pupuk anorganik.

1) Peneliti (*Researcher*); Pusat Penelitian Kopi dan Kakao Indonesia, Jl. PB. Sudirman No. 90, Jember.

Summary

In coffee plantation, solid waste of coffee pulp is usually collected as heap nearby processing facilities for several months prior being used as compost. The practice is leading to the formation of odor and liquid which contaminate the environment. Experiments to evaluate the effect of natural soil ameliorant derived from coffee pulp and minerals were conducted at The Indonesian Coffee and Cocoa Research Institute in Jember, East Java. The experiments were intended to optimize the use of coffee pulp to support farming sustainability and minimize negative impacts of solid waste disposal originated from coffee cherry processing. Prior to applications, coffee pulp was hulled to organic paste. The paste was then mixed with 10% minerals (b/b). Composition of the minerals was 50% zeolite and 50% rock phosphate powder. The ameliorant was characterized for their physical and chemical properties. Agronomic tests were conducted on coffee and cocoa seedling. The experiments were arranged according to Randomized Completely Design with 2 factors, consisted of natural ameliorant and inorganic fertilizer respectively. Natural ameliorant derived from coffee pulp was applied at 6 levels: 0, 30, 60, 90, 120 and 150 g dry ameliorant/seedling of 3 kg soil, equivalent to 0, 1, 2, 3, 4 and 5% (b/b) of ameliorant respectively. Inorganic fertilizer was applied at 2 levels: 0 and 2 g fertilizer/application of N-P-K compound fertilizer of 15-15-15 respectively. The inorganic fertilizer was applied 4 times during nursery of coffee and cocoa. The result of the experiment indicated that coffee pulp may be used as natural soil ameliorant. Composition of ameliorant of 90% coffee pulp and 10% of minerals has good physical and chemical characteristics for soil amelioration. The composition has high water holding capacity; cations exchange capacity, organic carbon and phosphorus contents which are favorable to increase soil capacity to support plant growth. Application of ameliorant derived from coffee pulp increased significantly growth of coffee and cocoa seedling. There was positive interaction effect between the ameliorant and the fertilizers. Both the ameliorant and the fertilizers affected the seedling growth synergistically. Application of the ameliorant increased efficiency of the fertilizer.

Key words: waste, coffee pulp, soil ameliorant, mineral.