

RINGKASAN

Kasgot merupakan limbah organik yang telah diproses menggunakan larva Lalat Tentara Hitam, namun hasil tersebut masih berupa limbah sehingga perlu difermentasikan. Kasgot yang difermentasikan dengan EM4 dan *Trichoderma* sp. dapat dimanfaatkan sebagai pupuk pada tanaman, seperti jagung. Jagung ungu merupakan jenis jagung ketan yang kaya akan gizi dan mengandung antioksidan yang baik bagi kesehatan manusia. Jagung biasa dibudidayakan pada tanah kering seperti tanah ultisol. Tanah ultisol merupakan tanah masam yang rendah akan kandungan P-tersedia sehingga perlu adanya pemupukkan fosfat menggunakan kasgot yang difermentasi dan pupuk SP-36. Penelitian ini bertujuan untuk (1) mengetahui pengaruh fermentasi kasgot dengan mikroba tertentu terhadap pertumbuhan dan hasil tanaman jagung ungu di tanah ultisol. (2) mengetahui pengaruh dosis pupuk SP-36 yang efisien terhadap pertumbuhan dan hasil tanaman jagung ungu pada tanah ultisol. (3) mengetahui interaksi antara fermentasi kasgot dan dosis pupuk SP-36 terhadap pertumbuhan dan hasil tanaman jagung ungu di tanah ultisol.

Penelitian dilaksanakan mulai 1 Februari 2022 hingga 15 Juli 2022 di *Screenhouse* Balai Benih Tanaman Pangan dan Hortikultura, Desa Bojongsari, Kecamatan Kembaran, Kabupaten Banyumas dan analisis dilakukan di Laboratorium Agroekologi, Laboratorium Tanah dan Sumberdaya Lahan, serta Laboratorium Agronomi dan Hortikultura, Fakultas Pertanian Universitas Jenderal Soedirman. Rancangan yang digunakan yaitu Rancangan Acak Kelompok (RAK) dengan dua faktor. Faktor pertama jenis mikroba fermentasi kasgot, yaitu K0 = tanpa fermentasi, K1 = fermentasi EM4, K2 = fermentasi *Trichoderma* sp. Faktor kedua dosis pupuk SP-36, yaitu P1 = 50 kg/ha, P2 = 75 kg/ha, P3 = 100 kg/ha (dosis rekomendasi). Faktor-faktor tersebut dikombinasikan dan didapatkan 9 perlakuan. Variabel yang diamati berupa tinggi tanaman (cm), jumlah daun (helai), diameter batang (mm), bobot basah tanaman (g), bobot kering tanaman (g), panjang tongkol dengan kelobot (cm), berat tongkol dengan kelobot (g), diameter tongkol dengan kelobot (mm), bobot basah biji per tongkol (g), bobot kering biji per tongkol (g), serapan P jaringan tanaman (ppm), P-tersedia tanah akhir (ppm).

Hasil penelitian menunjukkan bahwa perlakuan fermentasi kasgot berpengaruh terhadap bobot basah tanaman, bobot basah biji per tongkol dan bobot kering biji per tongkol. Fermentasi menggunakan EM4 dapat meningkatkan 9,03% terhadap variabel bobot basah tanaman lebih baik dibandingkan tanpa fermentasi, serta fermentasi menggunakan EM4 dapat meningkatkan 27,56% terhadap variabel bobot basah biji per tongkol lebih baik dibandingkan tanpa fermentasi, sedangkan fermentasi menggunakan *Trichoderma* sp dapat meningkatkan 29,13% terhadap variabel bobot kering biji per tongkol lebih baik dibandingkan tanpa fermentasi. Dosis pupuk SP-36 yang berbeda berpengaruh terhadap diameter tongkol dengan kelobot lebih baik dan serapan P jaringan tanaman. Dosis 50 kg/ha meningkatkan diameter tongkol dengan kelobot 6,58% lebih tinggi dibandingkan dosis 100 kg/ha (dosis rekomendasi), serta serapan P jaringan tanaman 23,03% lebih tinggi dibandingkan dosis 100 kg/ha (dosis rekomendasi). Terdapat interaksi antara kasgot yang difermentasi dengan EM4 dan dosis pupuk SP-36 sebesar 50 kg/ha terhadap

bobot kering tanaman meningkatkan 36,98% dibandingkan kasgot tanpa fermentasi dan dosis pupuk SP-36 100 kg/ha (dosis rekomendasi).

Kata kunci : kasgot, EM4, *Trichoderma* sp., SP-36, jagung ungu



SUMMARY

Kasgot is organic waste which has been processed with Black Soldier Fly larvae, but the result is just waste so that need fermentation. Kasgot which fermentation with EM4 and *Trichoderma* sp. can be used as fertilizer to plant, like corn. Purple corn is glutinous corn type which a lot of nutrition and contain antioxidant which good for people health. Corn usually cultivated at dry land like ultisol soil. Ultisol soil is acid soil which contain low P-available so there is need for using fertilizer to supply phosphate with kasgot fermentation fertilizer and SP-36 fertilizer. The purpose of research for (1) determine the effect using kasgot fermentation with certain microbe fertilizer to growth and crops yield of purple corn plants in ultisol soil. (2) determine the effect using dose SP-36 fertilizer which efficient to growth and crops yield of purple corn plants in ultisol soil. (3) determine interact to kasgot fermentation and dose SP-36 fertilizer to growth and crops yield of purple corn plants in ultisol soil.

This research was carried out from 1 February 2022 until 15 July 2022 in Screenhouse Food and Horticulture Corps Seed Hall, Bojongsari Village, Kembaran District, Banyumas Regency and analyze did in Agroecology Laboratory, Soil Science and Land Resources Laboratory, and Agronomy and Horticulture Laboratory, Faculty of Agriculture Jenderal Soedirman University. Experiment used was a Randomized Block Design (RBD) with two factors. First factor is microbe type in fermentation kasgot, that is K0 = without fermentation, K1 = fermentation with EM4, K2 = fermentation with *Trichoderma* sp. Second factor is dose SP-36 fertilizer, that is P1 = 50 kg/ha, P2 = 75 kg/ha, P3 = 100 kg/ha (recommendation dose). That's factors combined and find 9 treatments. The observed of variable are plant height (cm), leaves total (sheet), stem diameter (mm), wet plant weight (g), dry plant weight (g), corncob with husks length (cm), corncob with husks weight (g), corncob with husks diameter (mm), wet seeds weight by corncob (g), dry seeds weight by corncob (g), P absorption in plant (ppm), P-available final soil (ppm).

The result of research show kasgot fermentation fertilizer can take real effect in wet plant weight, wet seeds weight by corncob, and dry seeds weight by corncob. Fermentation with EM4 can increased to 9,03% to wet plant weight variable better than without fermentation and fermentation with EM4 can increased to 27,56 % wet seeds weight by corncob variable better than without fermentation, while fermentation with *Trichoderma* sp. can increased to 29,13% to dry seeds weight by corncob variable better than without fermentation. Dose SP-36 can take real effect in diameter corncob with husks and P absorption in plant. Dose 50 kg/ha to diameter corncob with husks variable had higher result to 6,58% than dose 100 kg/ha (recommendation dose), and P absorption in plant variable had higher result to 23,03% than dose 100 kg/ha (recommendation dose). There is interaction between kasgot which fermentation with EM4 and dose SP-36 fertilizer by 50 kg/ha to dry plant weight increased to 36,98% than kasgot without fermentation and dose SP-36 fertilizer by 100 kg/ha (recommendation dose).

Keyword : kasgot, EM4, *Trichoderma* sp, SP-36, purple corn