Pengaruh asam-asam organik dan penyangga pH senyawa humik ekstrak kompos jerami padi terhadap perubahan pH dan DHL

Effect organic acids and pH buffer in humic substances were extracted from rice straw compost on pH and EC

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Abstrak

Potensi senyawa humik yang diekstrak dari kompos jerami padi untuk bahan baku pupuk organik cair atau *soil amandemend* sangat besar karena mudah didapat, murah dan ada dimana-mana. Tujuan penelitian ini adalah mengetahui pengaruh penyangga pH dan asam-asam organik pada senyawa humik yang diekstrak dari kompos jerami padi terhadap pH dan daya hantar listrik (DHL). Penelitian dilaksanakan di Laboratorium Tanah, Fakultas Pertanian, Universitas Jember pada bulan April hingga Juli 2013. Senyawa humik yang digunakan diekstrak dari kompos jerami padi tanpa ada masukan yang dapat mempengaruhi karakteristik aslinya. Perlakuan penyanggaan pH senyawa humik antara pH 4 hingga 12 atau 9 nilai pH dan asam-asam organik sintetis yang digunakan adalah EDTA, asam sitrat, asam oksalat, dan asam asetat. Hasil penelitian menunjukkan bahwa karakteristik senyawa humik ekstrak kompos jerami padi mempunyai asam-asam organik dan makin matang makin dominan struktur karbon aromatiknya. Senyawa humik ini mengandung basa-basa dengan distribusi paling dominan adalah Ca dan/atau Mg dan sedikit Na, serta mengandung unsur hara lainnya baik makro maupun mikro. Evaluasi stabilitas peyanggaan pH oleh senyawa humik hingga 28 hari inkubasi pada pH rendah (4-6) dan tinggi (8-12) akan menurun pH dan terjadi sebaliknya atau meningkat apabila disangga pada pH sedang (6-8). Perlakuan konsentrasi senyawa humik 1000 dan 2000 ppm tidak berbeda nyata pada pH dan DHL suspensi baik pada 7, 14, 23, dan 28 hari inkubasi. Peningkatan pH senyawa humik dari 4 hingga 11 relatif tidak mempengaruhi DHL, akan tetapi peningkatan pH hingga 12 akan meningkatkan DHL sangat tinggi atau drastis. Perlakuan penambahan berbagai asam organik menurunkan pH dan meningkatkan DHL, akan tetapi penambahan 5 mM realtif tidak merubah nilai pH dan DHL senyawa humik.

Kata kunci: senyawa humik, kompos, pH, DHL

Abstrac

The humic substances were extracted from rice straw compost had a great potential for liquid organic fertilizer or soil amendment material, since it available on many location, not expensive and easy to find. The objectives of research were to study the effect organic acids and pH buffer treatments on humic substances extracted from rice straw compost on changes of pH and electric conductivity (EC). The research was conducted at Soil Laboratory, Faculty of Agriculture, Jember University on April until July 2012. This investigation was conducted with humic substances were extracted from rice straw compost. No materials (chemical or biology agent) were added during composting to avoid changes of original humic substance characteristics. The treatment of pH buffer was pH 4 until 12 or 9 points, while artificial organic acids treatments were EDTA, citric, oxalic, and acetic acid. The results showed that humic substances contain organic acids; furthermore the aromatic structure was dominant relation to mature condition of the substance. The humic substance was dominant by Ca, Mg and combination both of Ca and Mg, also less of Na. In addition, it contains other macro and micro nutrients. During 28 days incubation humic substances pH were decreased on low pH buffer (4-6) and high pH buffer (8-12), on the contrary humic substances pH was increased on medium pH buffer (6-8). The concentration of humic substances (1000 and 2000 ppm) was not affected significantly on pH and EC suspension at 7, 14, 23, and 28 days incubation. Increasing pH on humic substances from 4 until 11 did not affect EC, but EC was increased impressively with increasing pH till 12. Humic substance pH was decreased with many kinds of organic acids treatment, but EC was increased. However, on 5 mM concentration of organic acid was not changed on humic substances pH and EC.

Keywords: humic substances, compost, pH, EC

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