

Intisari

Penelitian ini bertujuan untuk mengetahui pelindian pupuk Fe komposit pada tanah vertisol dan pengaruh penggenangan terhadap pelepasan Fe. Penelitian ini dilaksanakan dari Oktober 2015 sampai Maret 2016. Uji pelepasan Fe yang terlindi pada tanah vertisol dianalisis menggunakan metode destruksi kering dengan larutan kimia asam klorida dan KSCN, dengan pembacaan secara kuantitatif menggunakan spektrofotometer. Berdasarkan analisis pada sistem penggenangan Fe yang terlarut lebih tinggi dibandingkan dengan yang tanpa penggenangan baik komposit Fe tipe 3:1 maupun 1:3 pada minggu ke 8, terutama pada perlakuan 200 ppm yakni pada komposit 3:1 sebesar 0.3644 ppm dan pada komposit 1:3 sebesar 0.322 ppm. Sedangkan pada kondisi tanpa penggenangan, perlakuan 200 ppm pada komposit 3:1 sebesar 0.0347 ppm dan pada komposit 1:3 sebesar 0.0318 ppm sehingga dihasilkan informasi bahwa alginat dan zeolit alam dalam komposit berinteraksi secara hydrogen. Hadirnya alginat dapat meningkatkan kelaurutan Fe dari komposit dan dapat melepaskan Fe didalam tanah vertisol pada sistem penggenangan. Selain itu uji pelepasan Fe(III) dari komposit alginat/zeolit/Fe dilakukan dengan merendam komposit dalam larutan asam sitrat 0.33M selama 2 bulan. Komponen Fe yang terlarut dalam sistem asam dianalisis secara kuantitatif dengan spektrofotometer UV-Vis.

Kata kunci: Kelaurutan Fe(III), Tanah vertisol, Komposit Fe, *Slowrelease* Fe, Penggenangan.

Abstract

Plants need the essential elements from the soil both macro and micro. One of the micro elements is the element of iron (Fe). Element of Fe plays an important role in plant physiologic. This element is needed by enzymes which involved in the process of the formation of chlorophyll and helps photosynthesis process. Lack of iron in the plant will cause lack of the chlorophyll in the leaves, with the result that it will inhibit the photosynthesis process of the plants and can reduce crop production. Availability of Fe is highly dependent on conditions and the character of the soil. In general, the soil which has a pH of alkaline cause lack of availability of Fe (II) and Fe (III) because the Fe's species is found in the form $\text{Fe}(\text{OH})_3$ which has a very low solubility. Composite of alginate/zeolite/Fe have been synthesized successfully by mixing solvent of alginate, zeolite's particles and solvent of Fe (III). composite character of alginate-zeolite/Fe was analyzed by using a spectrophotometer. Based on the analysis of inundation system, Fe with inundation is higher than Fe without inundation for both composite Fe type 3:1 or 1:3 at week 8, especially in the treatment of 200 ppm. With inundation, the composite of 3:1 is 0.3644 ppm and the composite 1:3 is 0,322 ppm while without inundation, composite Fe type 3:1 is 0.0347 ppm and the composite 1:3 is 0.0318 ppm. The conclusion is natural's alginates and zeolite in the composite interact by hydrogen. The extrication test of Fe (III) from the composite of alginate /zeolite /Fe made by soaking the composite in the solvent of 0.33M citric acid for two months. The dissolved Fe components in acid system were analyzed quantitatively by UV-Vis spectrophotometer.

Keywords: Solubility of Fe (III), Vertisol soil, Composite of Fe, Slowrelease Fe, Inundation.