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耕作方式对黄绵土无机磷形态的影响

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Effect of tillage methods on inorganic phosphorus forms in huangmian soil

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摘要 以设置在陇中黄土高原并已经进行了5年的田间定位试验为基础，采用蒋-顾石灰性土壤无机磷分级法，研究了不同耕作方式对黄绵土无机磷形态的影响。结果表明，供试土壤中78.6%的磷以无机磷形式存在，且以Ca-P占绝大多数。无机磷各形态含量排列顺序为：Ca_{10}-P >Ca_8-P >O-P>Al-P >Fe-P>Ca_2-P。与传统耕作不覆盖(T)相比，免耕秸秆覆盖(NTS)、免耕不覆盖(NT)、传统耕作结合秸秆还田(TS)均可降低土壤中的Ca_8-P、O-P和0—5 cm土层中的Ca_{10}-P含量，其中NTS最为明显；NTS处理可提高土壤中的Al-P、Fe-P含量。不同处理中，Ca_2-P、Ca_8-P、Al-P、Fe-P均以0—5 cm土层中含量最高，且随着土层的增加呈下降趋势；但是Ca_{10}-P 以5—10 cm土层含量最高；各处理O-P在土壤剖面中的变化没有显著差异。

关键词： 黄绵土 耕作方式 无机磷形态 黄绵土 耕作方式 无机磷形态

Abstract:

By the Jiang-Gu inorganic phosphorus fractionation method, this paper studied the long-term (5 yrs) experiment was conducted to compare the effects of different tillage on in-organic phosphorus forms in Huangmian soil. Fractionated by Jian-Gu systerm .The results showed that: ① Inorganic P (Pi) occupied the most part of soil P and accounted for 78.6% on average. Of the total Pi, Ca phosphorus (Ca-P) was the do- minant Pi fractions and accounted for 78.4% on average. Pi fractions varied in the order of Ca_{10}-P > Ca_8-P >O-P>Al-P >Fe-P>Ca_2-P. ② Compare to conventional tillage (T), the treatments of no-till with stubble reten- tion (NTS), no-till without straw cover (NT) and conventional tillage with straw incorporated (TS) could decrease the content of Ca_8-P ,O-P and Ca_{10}-P that in the 0-5cm soil depth, NTS could increase the content of Al-P, Fe-P, but the content of Fe-P had no significance (P <0.05) among the four treatments. ③ Ca_2-P, Ca_8-P, Al-P and Fe-P tended to decline with the soil depth among the four treatments. Ca_{10}-P accumulated in the 5-10 cm depth of the tested soil, O-P didn't show clear changes in the soil depth despite some fluctuation.

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