

不同施肥处理土壤胡敏酸及其级分与Fe²⁺的络合特征 I 胡敏酸原样与Fe²⁺的络合特征

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Complexation characteristics of humic acids with Fe²⁺ and their fractions from soil with different fertilization I . The complexation of humic acids with Fe²⁺

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摘要 采用 17年不同施肥处理(无肥、化肥、秸秆、厩肥) 土耕层土样,在对土壤胡敏酸性质研究的基础上,着重研究不同施肥处理土壤胡敏酸与Fe²⁺的络合特征,揭示络合作用与胡敏酸性质以及环境条件的关系。结果表明,不同施肥处理土壤胡敏酸与Fe²⁺的络合能力不同。和无肥处理相比,化肥处理胡敏酸的络合能力加强,logk值(络合稳定常数)增大,有机肥处理则使胡敏酸的络合能力下降,logk值减小。logk值大小与胡敏酸的羧基、酚羟基以及总酸度有关。pH值、温度、离子强度是影响络合稳定常数大小的环境因素,pH值由4到7,各处理胡敏酸的logk值增大,络合配位数也有增加趋势。温度升高,离子强度增大,logk值降低。胡敏酸与Fe²⁺络合反应是一个自发的放热反应,络合后整个体系的有序性增强,熵值减小。

关键词: 胡敏酸 Fe²⁺ 络合作用 施肥处理 胡敏酸 Fe²⁺ 络合作用 施肥处理

Abstract: In this paper, humic acids from cumulic cinnamon soil with different fertilization treatment (no fertilizer, chemical fertilizer, corn straw and manure) for 17 years were used for studying the complexation characteristic with iron on the basis of studying the properties of the humic acids The main results showed that complex ability of humic acid from organic material treatments (corn straw, manure) decreased comparing with that of chemical fertilizer treatment and no fertilizer treatment, which was caused by the low content of total acidity and carboxyl Complex ability of humic acid may be affected by the factor of pH, temperature and ion strength Complex stability constant (logk) increased as the pH rose, while decreased with the increase of ion strength and temperature The complex reaction of humic acid with iron was an exothermic reaction

Keywords:

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