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土壤胡敏酸与铜、锌离子的络合特征及生物有效性的研究

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Complexing characteristics of HA with copper and zinc and their biological availability

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摘要 通过田间试验研究了胡敏酸(HA)与铜、锌离子的络合特性。结果表明,施肥后土壤HA向结构复杂方向转化,HA与Cu^{2+}、Zn^{2+}之间的络合稳定性提高。HA-Cu^{2+}的logk值,有机肥大于化肥;HA-Zn^{2+}的logk值,以化肥的作用更明显。土壤HA与Cu^{2+}或Zn^{2+}络合,倾向于形成混合或多核络合物。施有机肥可提高HA-Cu^{2+}或HA-Zn^{2+}的结合强度和增加结合数量,而施化肥处理则相反。培养试验结果表明,有机肥处理的HA,玉米吸收Cu^{2+}、Zn^{2+}量下降,单施化肥处理下降较小;其中Cu^{2+}吸收量受影响程度较大,而Zn^{2+}吸收量没有那么明显。

关键词: 胡敏酸 Cu^{2+} Zn^{2+} 络合 吸附 生物有效性 胡敏酸 Cu^{2+} Zn^{2+} 络合 吸附 生物有效性

Abstract: In this paper,we studied the characteristics of complexes between Cu^{2+} /$Zn^{2+}$and HA and their availability under field condition.The results showed that long-term fertilization resulted in a construction of soil HA more complicated,and the complexes stability of HA-Cu^{2+}/Zn^{2+} more stable.Applying organic fertilizer could enhance logk value of HA-Cu^{2+} compared to chemical fertilizer; but the result was inversed for HA-Zn^{2+} in which applying chemical fertilizer had a more significant positive effect on logk.Soil HA was inclined to form mixed or mixed or polynuclear complexes with Cu^{2+}/Zn^{2+}.Applying organic fertilizer could increase the complexing strength and capacity of HA with Cu^{2+}/Zn^{2+}.However,applying chemical fertilizer could promote the activity and availability of HA-cation resulting in a reversed picture.The incubation experiment showed that applying HA treated with organic fertilizer reduced more Cu^{2+}/Zn^{2+} uptake than single application of chemical fertilizer in maize.In general,different fertilization had a more pronounced effect on Cu^{2+} than Zn^{2+} more pronounced.

Keywords:

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