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外加碳、氮对黄绵土有机质矿化与激发效应的影响

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Effect of supplying C and N on the mineralization and priming effect of organic matter in loessial soil

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摘要 应用^{14}C标记的葡萄糖和麦秸,^{15}N标记的$(NH_4)_2SO_4$和$Ca(NO_3)_2$对生黄绵土、菜园黄绵土土壤有机质的矿化与激发效应进行了研究。结果表明,外加有机质,特别是外加易分解的葡萄糖,和外加氮源,特别是外加$(NH_4)_2SO_4$,对两种黄绵土土壤的有机质矿化与激发效应都有明显的促进作用,土壤有机质的矿化是高肥力菜园黄绵土高于低肥力生黄绵土,而有机质矿化的激发效应却是低肥力生黄绵土高于高肥力菜园黄绵土。外加有机质与外加N同时施入土壤时,外加N对外加有机质的矿化与激发效应同样有明显的促进作用,并发现外加有机质与外加N在促进土壤有机质矿化与激发效应过程中表现出正交互作用。激发效应对土壤肥力的更新和培养有积极作用。

关键词: 标记碳 标记氮 黄绵土 有机质矿化 激发效应 标记碳 标记氮 黄绵土 有机质矿化 激发效应

Abstract: The mineralization and priming effect of soil organic matter in Raw Loessial Soil(RLS) and Garden Loessial Soil (GLS) were studied using incubation method by adding glucose-^{14}C,straw-^{14}C,NH_4-^{15}N,NO_3-^{15}N.The results showed that added organic matter,especially the easy decomposing glucose,and added N,especially the NH4-N,could significantly stimulate the mineralization and the priming effect of soil organic matter in RLS and GLS.The mineralization rate of soil organic matter was much higher in GLS than in RLS.However,the rate of the priming effect was lower in GLS than in RLS.The added organic matter combined with N applied into soil,the added N could stimulate the mineralization and the priming effect of added organic matter.The interactions between added organic matter and added N under present experimental systems have been found and observed that the interaction values were positive and were much higher in RLS than in GLS.It is concluded that the priming effect of soil organic matter was benefit for the mineralization of soil organic matter and improvement of soil fertility.

Keywords:

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