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不同有机物料培肥对渭北旱塬土壤微生物学特性及土壤肥力的影响

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Effects of application of different organic materials on soil microbiological properties and soil fertility in Weibei rainfed highland

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摘要 参考文献 相关文章

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摘要 通过田间试验，研究了施用不同有机物料对渭北旱塬耕地土壤微生物学特性及土壤肥力的影响。结果表明，化肥与不同有机物料配合施用，土壤微生物学特性［微生物量碳（MBC）、微生物量氮（MBN）、脲酶、碱性磷酸酶］以及部分土壤养分状况（全氮、速效磷、速效钾、阳离子交换量）比单施化肥处理均得到进一步改善。化肥配施秸秆堆肥处理效果最明显，其中微生物量碳增加了41.96%，微生物量氮增加了54.55%，脲酶活性增加了19.71%，碱性磷酸酶活性增加了7.35%，速效磷增加了63.12%；而且土壤微生物量碳、氮与速效磷、阳离子交换量呈显著正相关，微生物商（qMB）、脲酶活性、碱性磷酸酶活性与全氮、速效氮、速效钾含量呈显著相关；同时SMBC、SMBN、qMB等与作物产量密切相关（相关系数分别为0.85，0.74，0.82）。因此，化肥配施秸秆堆肥处理在渭北旱地雨热条件下对于全面提升土壤质量具有重要的意义；同时该区域土壤中微生物量碳氮与土壤养分状况、作物产量具有很好的一致性，可以表征土壤肥力状况及生产力水平。

关键词： 有机肥 培肥 土壤微生物量 土壤肥力

Abstract: A field experiment was carried out to study the effect of application of different organic materials on soil microbiological properties such as soil microbial biomass and soil fertility in Weibei rainfed highland . The results showed that the organic treatments(T2-T6) improved soil microbiological properties [soil microbial biomass C (MBC& N (MBN)、urease activity, alkaline phosphatase activity] and some nutrient situation（soil total nitrogen、available phosphorus、available potassium and CEC）compared with CK, especially in the mineral fertilizers plus straw compost treatment (T5). As follows, MBC、MBN、urease activity、alkaline phosphatase activity and available phosphorus increased by 41.96%, 54.55%, 19.71%, 7.35%, 63.12% respectively. Both of SMBC&SMBN had positive significant correlation with available phosphorus、CEC, and qMB、urease activity, alkaline phosphatase activity were with a significant correlation to soil total nitrogen、available nitrogen、available potassium. Meanwhile, there were closely correlation between MBC、MBN、qMB with crop yield (the correlation coefficient were 0.85，0.74，0.82 respectively). Consequently, mineral fertilizers plus straw compost treatment have profound significance on enhance soil quality comprehensively in Weibei rainfed highland. Also MBC & MBN could characterize soil fertility and productivity levels for its agreement with soil nutrient condition and crop yield.

Keywords: organic materials building up soil fertility soil microbial biomass soil fertility

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