PLANT NUTRITION AND FERT

ISSN 1008-505X
CN 11-3996/S

植物营养与肥料学报 » 2008, Vol. 14 » Issue (3) :424-430 DOI:

黄土旱塬长期施磷对土壤磷素空间分布及有效性的影响

慕韩锋[1]， 王 俊[1，2*]，刘 康[1]，刘文兆[2]，党廷辉[2]，王 兵[2]

1 西北大学环境科学系，陕西西安 710127； 2 中国科学院、水利部水土保持研究所，西北农林科技大学，陕西杨凌 712100

Effect of long-term fertilization on spatial distribution and availability of soil phosphorus in Loess Plateau

MU Han-feng[1], WANG Ju[1,2], LIU Kang[1], LIU Wen-zhao[2], DANG Ting-hui[2], WANG Bing[2]*

1 Department of Environment Science, Northwest University, Xian 710127, China; 2 Northwest A & F University, Institute of Soil and Water Conservation CAS, Yangling, Shanxi 712100, China

摘要 | 参考文献 | 相关文章

Download: PDF (527KB) HTML 0KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 对黄土旱塬定位施肥20年后土壤中不同磷素形态在土层中的空间分布及有效性进行了研究。结果表明，在不同施磷水平上，磷素在土壤表层发生累积。随着磷肥用量的增加，表层的全磷和有效磷的含量逐渐增加；而在下层土壤中虽有微量增加，但增幅不明显。说明长期合理施用磷肥可显著扩大土壤中的有效磷库。黄土旱塬区长期定位试验土壤表层中无机磷以Ca–P为主，占无机磷总量的80 % 以上。随着施磷量的增加，无机磷组分Ca_2–P、Ca_8–P、Al–P和Fe–P在土壤中的含量总体上都呈增加的趋势。通过有效磷与无机磷各组分的相关性分析及通径分析看出，Ca_2–P和Ca_8–P可称为有效磷源，O–P与Ca_{10}–P为潜在磷源，而Al–P和Fe–P介于二者之间。其中，Fe–P主要是通过影响其它组分而间接影响有效磷的含量。

关键词： 磷素 长期定位施肥 空间分布 有效性 无机磷组分 磷素 长期定位施肥 空间分布 有效性 无机磷组分

Abstract:

The spatial distribution and availability of soil phosphorus (P) in Loess Plateau after 20 years of phosphate fertilization was investigated in this study. Phosphorus mainly accumulated in the surface layer after long-term fertilization. Soil total P and Olsen-P increased gradually with fertilization rate, which indicated that long-term continuous fertilization could increase the available phosphorus storage significantly. Ca-P was the main fraction in soil inorganic P, which accounted for above 80% of the inorganic P. The contents of soil Ca_2-P、Ca_8-P、Al-P and Fe-P increased with the phosphate fertilization rate. Correlation analysis and path analysis showed that soil Olsen-P was significantly correlated with soil inorganic P, Ca_2-P and Ca_8-P, which can be the source of soil available P. Soil O-P and Ca_{10}-P, the potential sources of soil available P, had low correlations with soil Olsen-P. Soil Al-P and Fe-P had a medium correlation with soil Olsen-P, and in particular, Fe-P affected soil Olsen-P indirectly through other fractions.

Keywords:

Received 2007-05-09;

Service
把本文推荐给朋友
加入我的书架
加入引用管理器
Email Alert
RSS
作者相关文章

引用本文:

慕韩锋[1]， 王 俊[1，2*]，刘 康[1]，刘文兆[2]，党廷辉[2]，王 兵[2].黄土旱塬长期施磷对土壤磷素空间分布及有效性的影响
[J] 植物营养与肥料学报, 2008,V14(3): 424-430

MU Han-feng[1], WANG Ju[1,2], LIU Kang[1], LIU Wen-zhao[2], DANG Ting-hui[2], WANG Bing[2].Effect of long-term fertilization on spatial distribution and availability of soil phosphorus in Loess Plateau
[J] Acta Metallurgica Sinica, 2008,V14(3): 424-430