PLANT NUTRITION AND FERT

ISSN 1008-505X
CN 11-3996/S

植物营养与肥料学报 » 2009, Vol. 15 » Issue (1) :236-240 DOI:

水磷互作对潮土玉米苗期生长及磷素积累的影响

赵长海， 逄焕成*， 李玉义

中国农业科学院农业资源与农业区划研究所，北京 100081

Effect of interaction of water and phosphorus on maize growth and phosphorus accumulation in fluvo-aquic soil

ZHAO Chang-hai, PANG Huan-cheng*, LI Yu-yi*

Institute of Agricultural Resources and Regional Planning, CAAS, Beijing 100081，China

摘要 | 参考文献 | 相关文章

Download: PDF (326KB) HTML 0KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 利用温室盆栽试验研究了水磷互作对潮土玉米苗期生长及磷素积累的影响。结果表明，水、磷能显著影响玉米株高与叶面积状况。水分胁迫条件下，适度施磷处理比对照玉米株高和叶面积分别增加69.7%和33.6%；而适水条件下分别增加38.3%和48.0%。适度施磷条件下，水分胁迫促进了玉米根系发育，根干重与根冠比均高于适水处理。水磷配合能提高了玉米干物质积累量，表现出显著正交互效应。适度施磷范围内，适水处理能显著提高植株体磷素吸收积累总量，但对植株磷含量影响不大；适水处理下，过量施磷会导致植株对磷素奢侈吸收，而在水分胁迫下反而降低对磷素的吸收积累。水磷适度配合表现出较好的耦合效果，达到“以水促磷”与“以磷促水”的目的。

关键词： 潮土 水磷互作 玉米 积累 潮土 水磷互作 玉米 积累

Abstract： Pot experiments in greenhouse were conducted to investigate effect of soil water and phosphorus interaction on maize growth and P accumulation in fluvo-aquic soil. The results indicate that heights and leaf areas of the plant were significantly affected by soil water and phosphorus. Plant height and leaf area of maize under the suitable phosphorus application and water stress condition increased by 69.7% and 33.6%, while those under suitable phosphorus application and suitable water condition increased by 38.3% and 48.0%. Under water stress, maize root development was enhanced, and resulted in higher root dry weight and higher root to shoot ratio compared to the suitable water treatments. Interaction of water and phosphorus could increase maize dry matter accumulation and represents positive interaction effects. Suitable soil water treatments could increase plant phosphorus accumulation amounts, but have little effects on plant phosphorus contents among suitable phosphorus treatments. Excess amount of phosphorus application could result in plant extravagant absorption of phosphorus under suitable water treatments, while decreased phosphorus absorption was occurred under water stress treatments. These results indicate that suitable water and phosphorus interaction could have a good coupled effect which is represented as water could promote phosphorus effects and phosphorus could promote water effects at the same time.

Keywords：

Received 2008-02-27;

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:

赵长海， 逄焕成*， 李玉义.水磷互作对潮土玉米苗期生长及磷素积累的影响[J] 植物营养与肥料学报, 2009,V15(1): 236-240

ZHAO Chang-hai, PANG Huan-cheng*, LI Yu-yi.Effect of interaction of water and phosphorus on maize growth and phosphorus accumulation in fluvo-aquic soil [J] Acta Metallurgica Sinica, 2009,V15(1): 236-240