

膜下滴灌条件下灌水水质和流量对土壤盐分分布影响的田间试验研究

Field experimental studies on the effects of water quality and drip rate on soil salt distribution in drip irrigation under film

投稿时间: 2004-4-30 最后修改时间: 2004-12-24

稿件编号: 20050310

中文关键词: 微咸水; 膜下滴灌; 滴头流量; 灌水水质; 土壤盐分

英文关键词: saline water; drip irrigation under film; drip rate, water quality; soil salt content

基金项目: 国家自然科学基金项目(40371057); 国家863计划项目(2002AA6Z3201)资助

作者	单位
马东豪	西安理工大学水资源研究所, 西安 710048
王全九	西安理工大学水资源研究所, 西安 710048; 土壤侵蚀与旱地农业国家重点试验室, 杨凌 712100
来剑斌	中国农业大学, 北京 100094

摘要点击次数: 128

全文下载次数: 51

中文摘要:

膜下滴灌是一种既节水, 又能抑制土壤盐分上移的灌水技术。该文着重研究在田间条件下, 滴头流量、灌水量和灌水水质对微咸水点源入渗盐运移的影响。研究表明, 在充分供水条件下, 水平湿润锋和积水锋面随时间的推进符合幂函数关系; 滴头流量越小, 沿土壤深度方向上的盐分含量越小; 滴头流量越大, 水平方向含盐量随距离增加的趋势越不明显; 灌水量是微咸水灌溉条件下控制盐分累积的一个重要因素, 灌水量不足, 没有足够的入渗水量以确保盐分的淋洗; 灌水矿化度的升高会显著增加土壤表层的含盐量。

英文摘要:

Drip irrigation under film is a new technology with great potential to use saline water safely, which can not only save water but also prevent soil salt from moving up. In the paper, importance is focused upon the effects of drip rate, irrigated water amount and water quality on water and salt movement during point source infiltration. Point source infiltration experiments were conducted in field with different saline water and drip rates. The results indicate that power function fits well to the advances of horizontal wet front and ponding water area with time under the condition of sufficient water supply; the smaller the drip rate, the less the salt content along soil depth; the larger the drip rate, the more indistinctly the tendency of salt content increases with distance. It can also be found that irrigated water volume is a key factor to control salt cumulation when irrigating fields with saline water. Insufficient irrigation cannot guarantee enough leaching of soil salt for small infiltration volume. Besides, the rise of the salt content of irrigated water will increase salt content of the surface soil remarkably.

[查看全文](#)

[关闭](#)

[下载PDF阅读器](#)

您是第606957位访问者

主办单位: 中国农业工程学会 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100026 Email: tcsae@tcsae.org

本系统由北京勤云科技发展有限公司设计