

地膜覆盖对滴灌土壤湿润区及棉花耗水与生长的影响

Effects of plastic film mulch on the soil wetting pattern, water consumption and growth of cotton under drip irrigation

投稿时间: 2006-5-26 最后修改时间: 2006-12-31

稿件编号: 20070610

中文关键词: 滴灌; 土壤湿润区; 土壤水分; 棉花

英文关键词: drip irrigation; soil wetting pattern; soil moisture; cotton

基金项目: 国家自然科学基金资助项目(50569004; 50339030)

作者	单位
李明思	(1965-), 男, 新疆乌苏人, 博士生, 主要从事农田灌溉理论与技术研究。石河子石河子大学水利建筑工程学院, 832003。 Email: leemince-709@163.com
康绍忠	西北农林科技大学旱区农业水土工程教育部重点实验室, 杨凌 712100; 中国农业大学中国农业水问题研究中心, 北京 100083
杨海梅	石河子大学水利建筑工程学院, 石河子 832003

摘要点击次数: 215

全文下载次数: 172

中文摘要:

土壤湿润范围是滴灌技术设计中必须考虑的指标。以田间试验为基础, 通过测定、分析和对比膜下滴灌和无膜滴灌条件下土壤含水率田间分布、土壤耗水量田间分布、棉花生长状态(株高、叶面积指数、产量等)以及产量的差异等指标, 对膜下滴灌土壤湿润区的特征进行了研究。研究表明: 地膜覆盖条件下, 整个土壤覆盖面积均被湿润, 其土壤湿润比高于无膜滴灌下的土壤湿润比。地膜阻碍了地表积水区向膜外土壤扩展, 导致膜外土壤含水率低, 单根滴灌毛管控制面积内的土壤耗水量比无膜滴灌条件的耗水量低, 土壤水利用率明显高于无膜滴灌条件。但是, 这却造成生

英文摘要:

The index of soil wetting pattern is essential to the design of drip irrigation(DI). Field experiments were carried out to study the characteristics of soil wetting pattern for mulched drip irrigation(MDI) technique by comparison with the DI technique. In the experiments, soil moisture content in field was observed and analyzed as well as the soil water consumption and the characteristics of cotton growth, such as cotton stem high, leaf area index (LAI), cotton yields, and so on. Results show that, when the field surface is mulched by plastic film, the whole mulched area of field is irrigated, and the ratio of soil wetted area for the MDI is larger than that for the DI. The fact that the film covering over field resists soil saturation pond beneath dripper to expand to the soil out of the film, resulted in the soil moisture content out of the film being so low that soil water consumption for the MDI is lower than that for the DI within the area irrigated by a drip line. Water utility rate for the MDI is larger than that for the DI. But this fact causes the cotton, which is planted near by side of film, being unsatisfied growing compared with the cotton planted at the middle of film. In addition, the index of soil available moisture (ISAM) is used to assess the soil wetting pattern to clearly express the relationships between soil wetting pattern and crop water consumption. Thus the ISAM could be usable for designing the ratio of soil wetted area.

[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

