

滴灌施肥对设施番茄产量和氮素表现平衡的影响

樊兆博^{1, 2}, 刘美菊², 张晓曼², 陈永智³, 李俊良¹, 陈清¹, 王敬国², 林杉^{2*}¹青岛农业大学资源与环境学院, 山东青岛 266109; ²中国农业大学资源与环境学院, 北京 100094;³山东省寿光市农业局, 山东寿光 262722005. 中国农业大学资源与环境学院

Effect of dripper fertigation on tomato yield and apparent N balance in a greenhouse

FAN Zhao-bo^{1, 2}, LIU Mei-ju², ZHANG Xiao-man², CHEN Yong-zhi³, LI Jun-liang¹, CHEN Qing², WANG Jing-guo², LIN Shan^{2*}¹College of Resources and Environment Sciences, Qingdao Agricultural University, Qingdao, Shandong 266109, China;²College of Resources and Environmental Sciences, China Agricultural University, Beijing 100094, China;³Shouguang City Bureau of Agriculture, Shouguang, Shandong 262700, China

摘要

参考文献

相关文章

Download: [PDF \(979KB\)](#) | [HTML 1KB](#) | Export: [BibTeX](#) or [EndNote \(RIS\)](#) | [Supporting Info](#)

摘要 针对设施蔬菜传统栽培管理模式中水肥过量使用, 导致水资源浪费、硝态氮淋失污染地下水、病虫害增加等问题, 以山东省寿光市一年两季设施番茄传统灌溉施肥模式为对照, 通过测定番茄产量和土壤硝态氮累积量以及经济和环境效益分析, 研究了滴灌施肥一体化栽培管理模式对设施番茄产量和氮素表现平衡的影响。结果表明, 与传统水肥管理模式相比, 滴灌施肥一体化模式显著提高了番茄产量, 全年增产19.6%, 净收益提高33%; 氮肥和灌溉用水量分别减少了80%和36%。传统水肥管理模式0—90 cm土层NO₃-N平均残留量和表观氮素盈余分别高达N 1075±51和999±61 kg/hm², 而滴灌施肥一体化模式则分别为N 572±46和-46±40 kg/hm², 大大降低了氮素淋洗和气态损失的潜在风险。

关键词: 设施番茄 滴灌施肥模式 硝态氮淋失 经济效益

Abstract: Conventional water and fertilizer management for greenhouse vegetable crops results in soil nitrate accumulation and severe leaching, groundwater contamination and heavy occurrence of soil borne plant pathogens, which have been attributed to higher input of fertilizer and much frequent flooding irrigation. In the present study, two irrigation/fertilization systems were compared in a greenhouse experiment conducted in Shouguang, Shandong. Results showed that the fertigation with a dripper system increased production of tomato yield by 19.6%, compared with the conventional system. During a whole growing season, 36% of water and 80% of nitrogen were saved. And total economic input was 18 percent lower and net benefit reached to an increase by 33%. The nitrate accumulation in the soil profile (0–90 cm) depth was N 1075±51 kg/ha for conventional production system and N 572±46 kg/ha for dripper fertilization system, while N 999±61 and -46±40 kg/ha was not recovered and thought to be lost from the both systems respectively.

Keywords: greenhouse tomato drip irrigation NO₃- leaching economic benefit

Received 2010-05-05; published 2011-06-24

Fund:

国家科技支撑计划项目 (2008BADA6B02; 2006BAD07B03); 地方项目

Corresponding Authors: 李俊良 Email: jll1962@163.com

引用本文:

樊兆博 刘美菊 张晓曼 陈永智 李俊良 陈清 王敬国 林杉. 滴灌施肥对设施番茄产量和氮素表现平衡的影响[J] 植物营养与肥料学报, 2011, V17(4): 970-976

FAN Zhao-bo LIU Mei-jun ZHANG Xiao-man CHEN Yong-zhi LI Jun-liang CHEN Qing WANG Jing-guo LIN Shan. Effect of dripper fertigation on tomato yield and apparent N balance in a greenhouse[J] Acta Metallurgica Sinica, 2011, V17(4): 970-976

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

- ▶ [樊兆博](#)
- ▶ [刘美菊](#)
- ▶ [张晓曼](#)
- ▶ [陈永智](#)
- ▶ [李俊良](#)
- ▶ [陈清](#)
- ▶ [王敬国](#)
- ▶ [林杉](#)