

施肥管理对东北黑土区玉米耗水量的影响

邹文秀, 韩晓增, 王守宇, 江恒, 杨春葆

中国科学院东北地理与农业生态研究所

Water consumption by Maize Under Different Fertilization Managements in Black Soil Zone of Northeast China

ZOU Wen-Xiu, HAN Xiao-Zeng, WANG Shou-Yu, JIANG Heng, YANG Chun-Bao

Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences

摘要

参考文献

相关文章

Download: [PDF \(1087KB\)](#) [HTML 1KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 以东北黑土区长期定位试验为基础, 选取2000、2003、2005和2007年为研究时段, 分析不施肥(CK)以及化肥(NP)和化肥+有机肥(NPM)施用对玉米耗水量和土壤供水量的影响。结果表明, 玉米的耗水高峰出现在拔节—抽雄期和抽雄—成熟期, 这2个阶段的耗水模数分别为24.41%和47.07%, 全生育期的平均耗水强度为 $3.64\text{mm}\cdot\text{d}^{-1}$ 。降水量和降水的分配显著影响玉米的耗水特征。肥料的施用可明显增加玉米在干旱年份和生长季干旱时期的耗水量, 并显著增加玉米的水分利用效率, 其中以NPM处理的效果较好。各处理土壤含水量由高到低依次为NPM、NP和CK处理。因此在东北黑土区, 有机肥和化肥配施是提高玉米的水分利用效率以缓解季节性干旱胁迫的有效途径。

关键词: 黑土 施肥管理 玉米耗水量 土壤供水

Abstract: Based on the long-term field experiment in the black soil region of Northeast China, effects of fertilization, designed to have CK (no fertilizer), Treatment NP (chemical fertilizer) and Treatment NPM (chemical fertilizer plus pig manure), on water consumption of maize and soil water supply capacity were analyzed, using the data in 2000, 2003, 2005 and 2007. Results show that the peak of water consumption by maize was observed during the jointing - tasseling stage and tasseling-maturity, reaching 24.41% and 47.07% in water consumption module, respectively, and the average water consumption intensity of the crop throughout the whole growth period was $3.64\text{mm}\cdot\text{d}^{-1}$. The characteristics were significantly affected by amount and distribution of rainfall. Higher water consumption and higher water consumption efficiency were found in Treatments NP and NPM in droughty years and some droughty periods during the maize growing season. In terms of soil water supply, the three treatments followed a decreasing order of NPM > NP > CK. So, application of pig manure in combination of chemical fertilizer is an effective practice to increase the soil water utilization efficiency of maize and mitigate seasonal drought stress.

Keywords: black soil fertilization practice water consumption of maize soil water supply

Received 2012-02-15; published 2012-11-25

Fund:

国家重点基础研究发展计划(2011CB100506); 国家自然科学基金(40971152, 41101208)

Corresponding Authors: 韩晓增 中国科学院东北地理与农业生态研究所 Email: xzhan@neigaeherb.ac.cn

About author: 邹文秀(1982-), 黑龙江巴彦人, 女, 助理研究员, 主要从事农田土壤水分方面的研究。E-mail: zouwenxiu@hotmail.com

引用本文:

邹文秀, 韩晓增, 王守宇, 江恒, 杨春葆. 施肥管理对东北黑土区玉米耗水量的影响[J] 生态与农村环境学报, 2012, V28(6): 681-686

ZOU Wen-Xiu, HAN Xiao-Zeng, WANG Shou-Yu, JIANG Heng, YANG Chun-Bao. Water consumption by Maize Under Different Fertilization Managements in Black Soil Zone of Northeast China[J] Journal of Ecology and Rural Environment, 2012, V28(6): 681-686

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

- ▶ 邹文秀
- ▶ 韩晓增
- ▶ 王守宇
- ▶ 江恒
- ▶ 杨春葆