

劣质水灌溉对土壤盐碱化及作物产量的影响

Effect of marginal water irrigation on soil salinity, sodicity and crop yield

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作者	单位
李法虎	中国农业大学
	以色列土壤、水和环境科学研究所

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中文摘要:

长期的劣质水灌溉将导致土壤潜在的次生盐碱化。通过在以色列的大田试验,分析了劣质水灌溉对浅埋地下水位条件下土壤盐碱动态和作物产量的影响。试验在安装有暗管排水系统的试验田中进行。试验田土壤为粉砂粘土,种植有饲料玉米(*Zea mays L.*)。试验结果显示,高盐碱地下水的侧向运动和蒸发形成了试验田南半部和北半部土壤中盐碱度分布的巨大差异。在试验条件下,0~1.2 m土壤中的盐分在整个玉米生长期内平均增加了7.5%,碱度增大了19.6%。作物产量和植株高度与土壤含盐量成反比,籽粒产量受影响最为严重。利用冬季的降雨淋洗土壤盐分是维持本地区灌溉农业持续发展的关键。

英文摘要:

Irrigation with marginal water for an extended period of time will result in potential secondary soil salinization and sodification. The influence of marginal water irrigation on the dynamic balance of soil salinity and sodicity, as well as crop yield under shallow groundwater table, was investigated. This experiment was conducted in a subsurface-drained plot with silt clay soil where forage corn (*Zea mays L.*) had been planted. The experimental results indicated that the lateral movement of saline and sodic groundwater and its evaporation resulted in a significant difference of salt and sodicity distribution between the north and south parts of the experimental plot. Under the experimental conditions, the salt in 0~1.2 m soil increased by an average of 7.5% and sodicity by 19.6% during the corn growth season. Plant yield and height inversely correlated with soil salinity. Among grain yield, dry matter weight and plant height, the grain yield was most negatively affected by soil salinity. Therefore, utilizing rainfall in winter to leach soil salt is necessary to maintain sustainable irrigation agriculture in this region.

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